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p. 476

TRANSPORTATION IN *Manitoba*

The Honourable John Bracken,
Premier of Manitoba.

Sir,

I have the honour to submit herewith a report on Transportation in Manitoba, being Project No.9 under the Economic Survey, and the tenth of a series of reports covering many phases of the economic and social life of the province. This report is the work of J.V.Dillabough, B.Sc. C.E. D.L.S., Transportation Engineer, Canadian National Railways, Winnipeg, Manitoba.

I have the honour to be,

Sir,

Your obedient servant,

C.B.Davidson,
Director.

Winnipeg, Manitoba.
May 30, 1938.

TRANSPORTATION IN MANITOBA

- by -

J.V.Dillabough

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Director - C.B.Davidson, M.A.
Chief Research Associate - H.C.Grant, Ph.D.

TABLE OF CONTENTS

LIST OF CHARTS

CONCLUSIONS

In its railways, its provincial highways and motorized transportation, and in its aviation services, Manitoba is well provided with transportation facilities except probably in some of her more northerly areas which are now in the process of development. The main problem of transportation in Manitoba is to co-ordinate all these forms of transportation in the interests of the economic life of the province.

Railroads have long since been brought under thorough governmental regulations and it is inevitable that the same degree of regulation must be extended to other forms of transportation, regulation which is universally regarded as being in the public interest. In actual practice this means the extension of governmental control as it exists today in respect to the railroads to other forms of transportation which are operating within the province.

The most essential tonnages in western Canada are carried by the railways. Trucks cannot possibly move the western wheat crop to market, nor provide the homes of western Canada with fuel for long winters. These articles, among others, require mass transportation and the closing down of branch lines in Manitoba and other parts of Canada would immediately involve certain areas in many difficulties. Many of their requirements, such as the movement of their grain products cannot be handled by trucks or buses. Likewise, the severity of western winters would make it impossible to have dependable truck and bus service 12 months in the year. There is no substitute for the railroad; it does the work that no other transportation facility can do.

In view of the essential functions which railways alone can perform it goes without saying that railroads must be permitted to operate, and they can only continue to operate under equitable competitive conditions with other forms of transportation. It is probable that railways with their large investment in equipment and road beds, and heavy maintenance costs with respect to trackage, cannot compete in the long run with transportation agencies whose road bed is provided out of public taxation. It, therefore, seems essential that these transportation facilities which are operating on public highways must be called upon to bear a fair share of the capital cost of these highways and the cost of their maintenance.

In order to give reasonably good service with respect to the bulk products which are required by every community in western Canada the railroads must have a reasonable chance of competing with respect to lighter freight, passenger traffic, express, etc., traffic which is now being handled in substantial volume by trucks and buses.

The railroads have been singularly affected by the volume of tonnage which is now being handled by commercial trucks and buses. Railroads operate with very large fixed costs and therefore a certain point must be reached in respect to volume of traffic handled before they can commence to have net earnings. Therefore, from the standpoint of profitable operations the extra volume handled by the railroads beyond that required to carry fixed costs is highly important. It is at this point that truck and bus competition has made it extremely difficult for the railways, by taking away just that amount of passenger and freight traffic which would probably permit the railroads to operate on a financially sound basis. We

do not mean by this statement that bus and truck transportation should be eliminated - far from it. It is obvious that the railways, trucks and aeroplanes are here to stay as the main part of our transportation facilities. If, however, these forms of transportation are to operate efficiently and in the public interest there must be equality of opportunity in respect to the transporting of freight and passenger traffic.

It is probable that the eventual solution of the transportation problem in Canada must be national in approach and national in scope - a co-ordinated transportation system for Canada as a whole. However, as long as the province of Manitoba is determining the basis of truck and bus competition with the railways certain responsibilities lie with the province. Mainly these responsibilities are in the direction of making competitive conditions fair and equal as between truck and bus and railways which probably can be accomplished by assigning to trucks and buses a fair share of the actual costs involved in running these types of transportation equipment over expensive public highways.

The transportation industry today is "big business" in which governments are heavily involved, whether they like it or not. The railway facility has been in operation for many years and is now regulated and controlled in all its activities, as much in the interests of the railways themselves as for the public welfare, and is the one agency which, more than any other, has made possible the development of our natural resources as well as the industrial expansion enjoyed by our country at the present time.

Motorized highway transportation is a recent development whose proper place in the industry is not yet fully understood. This new agency, owing to its greater flexibility, undoubtedly has its place in the transportation field and it is believed that its greatest contribution to the public welfare will be found to be in its functioning as a complement to the railway facility. As a competitor with the railway the net result is largely the subtraction of revenues from a facility which is essential.

The problem of adjusting the various transport agencies, and their conditions of operation, so that each will perform that part of the whole transportation service which it is economically best fitted to perform is most complex, involving extensive studies of the engineering and economic aspects of the whole matter, particularly of highway transportation, which, so far as is known, have yet to be made in the province of Manitoba. Such studies would determine such matters as:-

1. What proportion of total highway costs should be borne by motorized vehicles
2. Basis of taxation of motor vehicles which would return such proportion of costs to the province each year.
3. Allocation of such tax burden equitably as between the various classes of motor vehicle, i.e., private passenger motor car, commercial vehicles, public service vehicles, etc.
4. Routes or areas in which public service vehicles may operate and class of service they may perform.
5. Nature and frequency of reports to be submitted to the proper authority by operators, covering necessary phases of their operations including class and weight of commodities handled, wages paid, mileages run, expenses, etc.

In brief, the "relations of motor carriers to the public, the railways and to one another".

It is believed that the results of such a study would be of assistance to the Municipal and Public Utility Board in the performance of their duties, would be welcomed by motor carriers and private car owners as placing the industry upon a sound basis, and by the railways as guaranteeing a "fair field to all and favor to none".

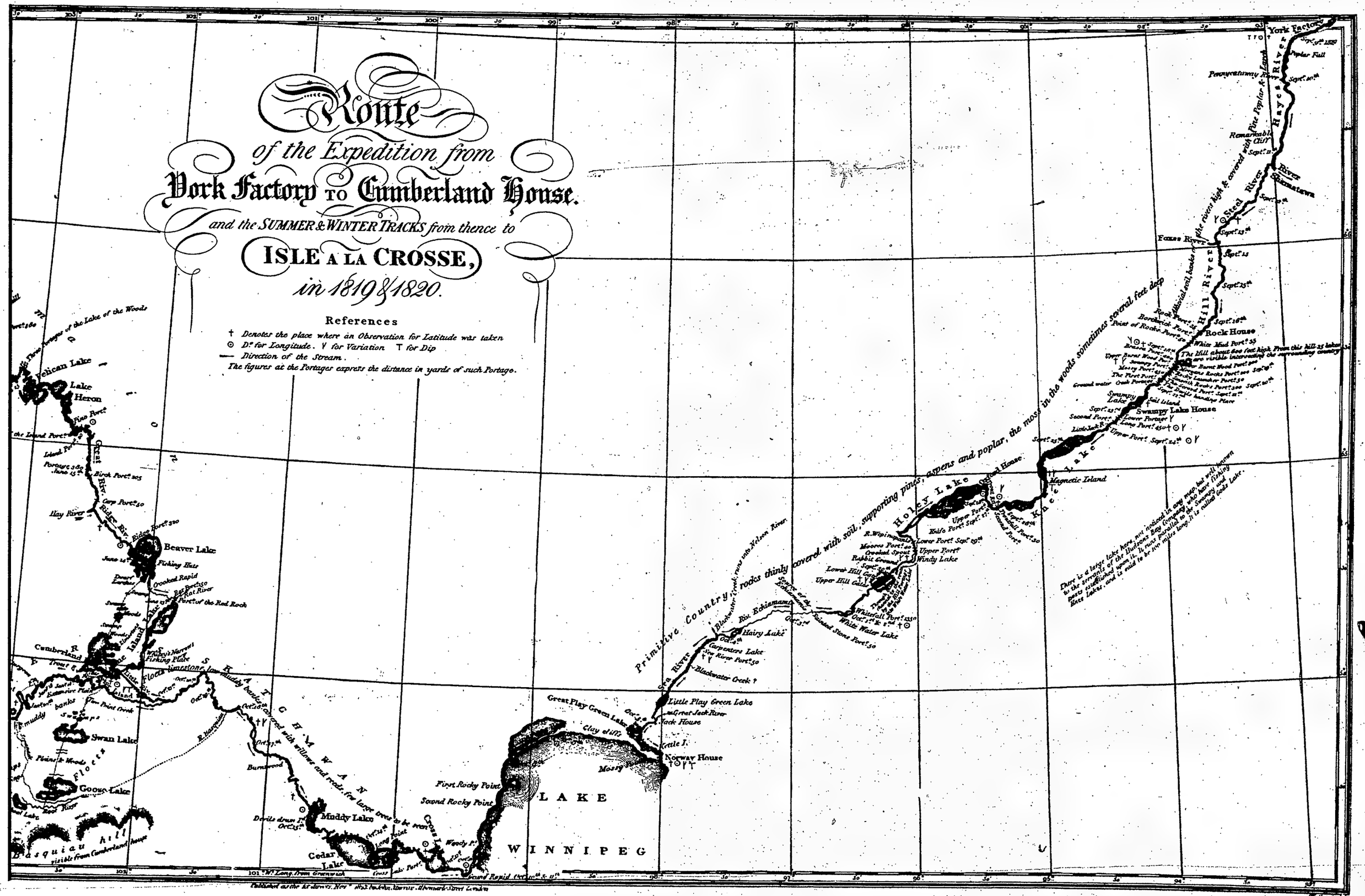
It is therefore recommended, as suggested elsewhere in this report, that the University of Manitoba be asked to make a study of highway transportation in the province in all its aspects, to the end that the whole transportation industry may be placed on a proper basis, equitable as between the various transport agencies, and economically sound as regards the province as a whole.

Route of the Expedition from York Factory to Cumberland House.

and the SUMMER & WINTER TRACKS from thence to ISLE A LA CROSSE, in 1819 & 1820.

References

† Denotes the place where an Observation for Latitude was taken
⊙ Do. for Longitude. Y for Variation T for Dip
—— Direction of the Stream.
The figures at the Portages express the distance in yards of such Portage.



The map on the preceding page, remarkable for its accuracy and detail, is a portion of a map made by Capt. (later Sir) John Franklin of the route he travelled in 1819-20 from York Factory to Point Turnagain on Coronation Gulf, and published in 1823.

Note the numerous observations taken for latitude, longitude, magnetic variation and dip of the needle.

Capt. Franklin spent the winter of 1819 at Cumberland House.

This map is included in this report as being considered of particular interest to Manitobans.

CHAPTER I

TRANSPORTATION IN MANITOBA

HISTORICAL INTRODUCTION

The waterways of the province formed the natural avenues of transportation by which the explorer, then the fur trader, and lastly the settler, crossed the plains. There were two main highways which led from the Old World to that part of the New World we call western Canada, the northern route by Hudson Bay or the southern route by the waterways of the Great Lakes. The effort to solve the secret of the northwest passage to the Far East, by either the northwest waterway or an overland route, led to the discovery of the great plains of western Canada and opened these highways to the explorers and those who followed. In the latter part of the seventeenth century, English explorers, seeking the water route, had visited the shores of what is now Manitoba; a century later, the French, seeking an overland route, came by the waterways of the Great Lakes. The waterway marked out by Henry Hudson is today Manitoba's water communication with Europe - the Hudson Bay route. The overland route marked out by La Verendrye who reached the present site of Winnipeg just two hundred years ago is paralleled today by the Canadian Pacific Railway.

In the wake of the explorer came the fur trader. The routes of the rival fur trading companies, Hudson's Bay and Northwest, crossed and recrossed each other from the St. Lawrence Basin and the Hudson Bay to the foothills of the Rockies. The Hudson Bay posts, Churchill and York Factory were important trading centres for two centuries. But the activity of the fur traders

on the Lower Saskatchewan forced the Company to alter its policy and to build posts inland. In 1774 Cumberland House (situated on the Saskatchewan River just beyond the provincial boundary) was built by Samuel Hearne. It was the fur trader who established the first commercial highways that were the trade routes of the prairie until railway communication was made in the west.

In the north, two of the historic routes were the Hayes River and the Saskatchewan. Through York Factory, the terminus at the mouth of the former river, passed the Hudson's Bay supplies for all posts west and furs to the markets of Europe. From York Factory the route went upstream and southwest along the Hayes River, down the Echimamish to the Nelson, thence to Norway House at the northern end of Lake Winnipeg. From Norway House the voyageur could go south to the Red River or west to the mouth of the Saskatchewan.

Cumberland House held a strategic position on the second primary trade. From here until their amalgamation in 1821, the two companies sent their furs over the same route, to Lake Winnipeg, there to separate, one northward to Hudson Bay; the other eastward by the Winnipeg River to the Great Lakes. From Cumberland House those going west continued on the Saskatchewan to Rocky Mountain House, beyond Edmonton; those going northwest left this waterway by connecting waterways for the upper reaches of the Churchill River, to Portage la Loche. At these remote points, the brigades from the north were met, and supplies were exchanged for furs.

Fort Douglas (erected 1780 by the Hudson's Bay Company) and Fort Gibraltar (erected 1806 by the Nor'westers) were the trade centres at the junction of the Assiniboine and Red Rivers. Trade routes went from here to the north by the Red River and Lake Winnipeg to Norway House or to Cumberland House. Another route could be followed west along the Assiniboine river to the present site of Portage la Prairie (the portage of the prairie), then a portage of fourteen miles north to reach the shores of Lake Manitoba, thence to Lake Winnipegosis, another short portage to the Saskatchewan.

CANOE BRIGADE, DOG TEAM.

Travel was by canoe in summer and dog team in winter. The canoes were built thirty or forty feet long, with a width of six feet and two feet deep, manned by some twenty-four Indians, or French Canadian "voyageurs" who decked themselves and their canoes in colour. Sixty men could be carried with fifty barrels of flour. At a portage twelve men were needed to lift the canoe out of the water, and six to carry it on their shoulders.

The voyageurs formed a class of men as distinct in dress, manner and customs as the sailor or the lumberjack. They were small of stature, gay, unassuming, honest and extremely courteous. Their essential characteristics were joy and pride in their work and their love of boasting. The speed of their dogs, the lines of their canoes, the heaviness of their burdens on portages, their skill in shooting rapids and similar topics were discussed early and late. The hero of every voyageur's yarn was himself. Whether in canoe or with dog trains the voyageurs were forever

trying to out-do one another in speed and endurance.

The canoe brigades to the various posts made their annual trips with an efficiency similar to that of the modern railway with its ideal of "trains on time". Regular hours, generally eighteen hours of labour and six hours of rest, were set. If necessary, they went on for days and nights without intermission and repose, with the precision of an army on the march.

In his "Reminiscences of a Canadian Pioneer", Samuel Thompson says:

> "To see those stately boats, with their no less stately crews, gliding with measured stroke, in gallant procession, on their way to the vast wilderness of the Hudson's Bay territory, with the British flag displayed at each prow, was a sight never to be forgotten."

A description of the dog brigades of the Hudson's Bay Company coming in from the winter's hunt is given so vividly by Agnes Laut in "The Adventurers of England on the Hudson Bay", it is best quoted:

> "Against the rolling snowdrifts appeared a line, at first grotesquely dwarfed under the mock suns of the eastern sky veiled in a soft frost fog. Then a husky-dog in bells and harness bounced up over the drifts, followed by another and yet another - eight or ten dogs to each long, low toboggan that slid along loaded and heaped with peltry. Beside each sleigh emerged out of the haze the form of the driver - a swarthy fellow, on snow-shoes with hair bound back by a red scarf, and corduroy trousers belted in by another red scarf, and fur gauntlets to his elbows - flourishing his whip and yelling, in a high, snarling falsetto, 'marche! marche ! - the rallying - cry of the French woodrunner since first he set out from Quebec in the sixteen-hundreds to thread his way westward through the wilds of the continent.

"Behind at a sort of dog-trot came women clothed in skirts and shawls made of red and green blankets; papooses in moss bags on their mothers' backs, their little heads wobbling under the fur flaps and capotes. Then, as the dog team sped from a trot to a gallop with whoops and jingling of bells, there whipped past a long, low, toboggan-shaped sleigh with the fastest dogs and the finest robes - the equipage of the chief factor or trader. Before the spectator could take in any more of the scene, dogs and sleighs, runners and women, had swept inside the gate."

It is not easy to realize the vast territory covered by these operations, the tremendous distances travolled, the transportation difficulties overcome, the efficiency of the organization and the ability of those who were responsible for it. It required men with red corpuscles in their veins. This was accomplished in one generation when the swiftest means of travel was a birch canoe and the swiftest communication an Indian runner. Those days were the prelude to the Red River cart, steamer, wagon transport, stage coach and railway.

THE TRAIL AND RED RIVER CART.

In those days, Manitoba and the prairies lying west were a vast wilderness. Only explorers and fur traders, by the nineteenth century, had penetrated this great lone land held in 'fee by wandering tribes of Indians and by herds of buffaloes'.[1] The only records left on the prairies by other activities than those of the changing seasons were the trading posts of the fur traders and the permanent buffalo trails! Thousands of herds of buffalo, searching for pasturage, moved slowly northward in the spring and southward in the fall, along those food routes which through countless generations they

1 "Builders of the West" by F. W. Howay.

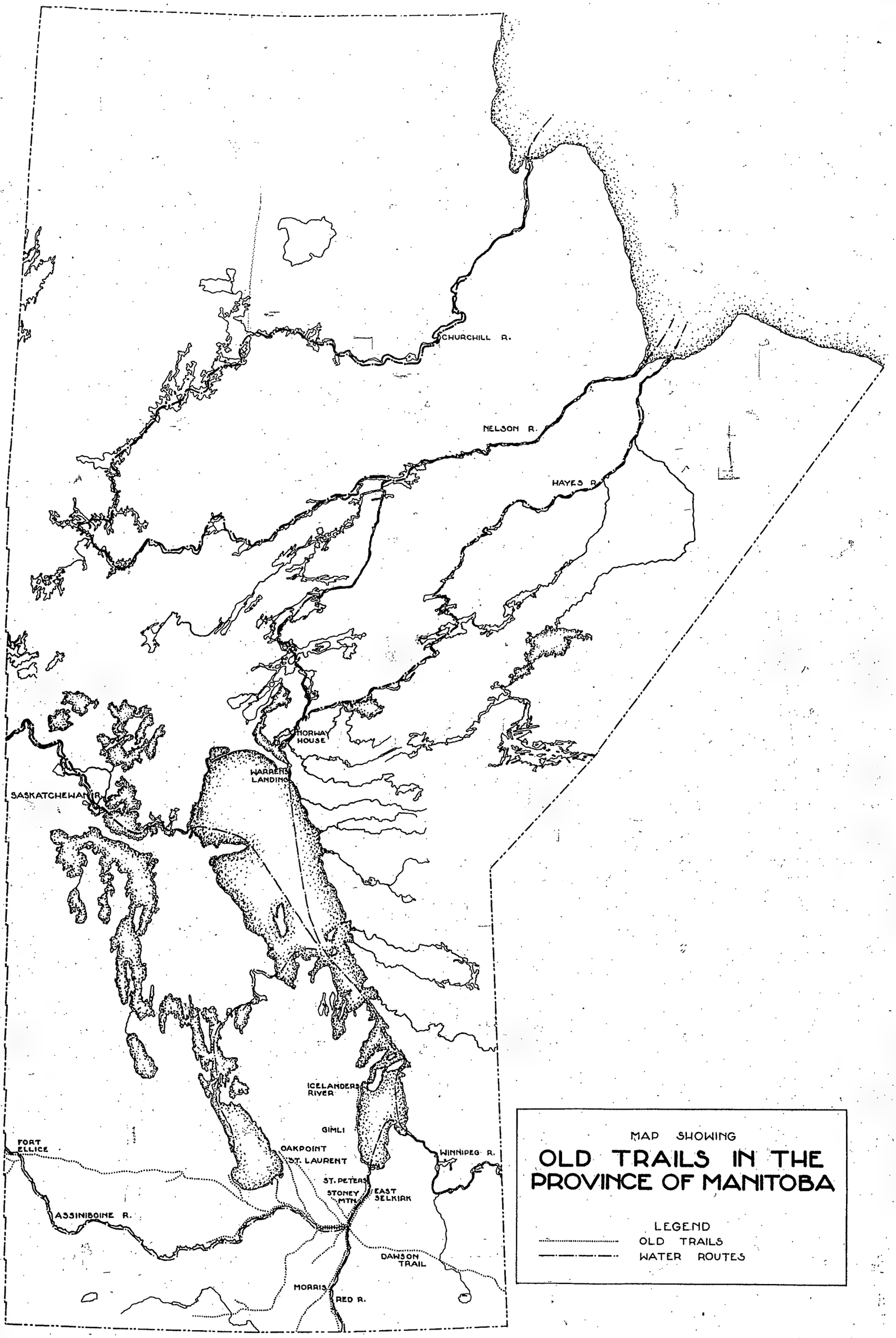
had learned to use. In these journeys, they had the habit of travelling in single file; thus forming long narrow paths, known as "buffalo trails", yet traceable in many places.

Such was Manitoba when the first settlers came to the Red River Valley, August 30, 1812. Here they found no provision for their coming. It was too late in the season to grow any crops. There was only one thing to do if they were not to starve - seek the buffalo, where they spent the winter in the Pembina hills. The buffalo meat could be eaten fresh and if it were cut in fine pieces, mixed with berries and boiled fat, preserved in skin bags, it made the portable and nutritious food called "pemmican". So, some seventy miles south, Fort Daer was built on a point of land close to the junction of the Pembina and Red Rivers, and near the present town of Pembina. When the second little band arrived October 27, they found they must leave at once for Pembina. So, guided by the Indians, they took to the trail.

Men and women had to trudge on foot while the Indians agreed to carry the children, in return for which they collected articles that appealed to their fancy.

> "The journey to Pembina", says Ross in 'The Red River Settlement', "exhibited a strange perversion of things: the savage, in aristocratic independence, was completely equipped and mounted on a fine horse, while the child of civilization, degraded and humbled, was compelled to walk after him on foot ..... All things considered, the Indians performed their contract faithfully --- To the Scotch emigrants, who were completely in their power, they were everything they could wish; mild, generous and trustworthy."

This trek along the Red River to the Pembina River is of historic significance. Compelled to migrate yearly in order


CHURCHILL R.
NELSON R.
HAYES R.
NORWAY HOUSE
WARREN'S LANDING
SASKATCHEWAN R.
ICELANDERS RIVER
GIMLI
OAKPOINT
ST. LAURENT
ST. PETERS
STONEY MTN.
EAST SELKIRK
WINNIPEG R.
FORT ELLICE
ASSINIBOINE R.
DAWSON TRAIL
MORRIS
RED R.
MAP SHOWING
OLD TRAILS IN THE PROVINCE OF MANITOBA
LEGEND
OLD TRAILS
WATER ROUTES

to keep in touch with the much-needed supplies of buffalo meat, the settlers laid claim to the land for the British and pushed its claim southward to the 49th parallel. It was the baptism of a commercial highway which has been in use constantly for over a century. The rough, ill-defined road, the trail of yesterday with its long line of creaking carts is the clearly defined Pembina Highway of today with its stream-lined swift-moving motors.

Despite hardships, which form a chronicle in themselves, the Red River Colony grew and became permanently established, although eight hundred miles from the sea and five hundred miles from the nearest market. Supplies were brought in from England by the ships of the Hudson Bay Company which came to York Factory; from there to the colony by York boats which went as far as Brandon House on the Assiniboine river and returned in one season.

In "Steel and Empire", John Murray Gibbon tells:

> "The York boats were introduced by Governor Simpson as less subject to wear and tear, better suited to the northern waters and having greater cargo capacity than the Indian canoe. They tapered at each end but were not flat-bottomed like the bateau. It was safer to sail a boat of this kind through stormy Lake Winnipeg, and the brigade of eight boats might carry as much as forty-eight tons of fur or merchandise, with only five minutes' delay at each portage to load or unload each boat. The steersman who sat on a raised platform in the stern of the boat directed the eight tripsmen, who plied the oars and carried the bales over the portages, usually half-breeds or Indians, the whole brigade being under the command of a responsible guide. Packages were made up in standard bales of one hundred pounds each, the usual cargo of the York boat being seventy-five bales.
>
> "In winter, travel was done by runners on snowshoes with sleds drawn by huskies, the half-wolf dogs of the Eskimos. The mail packet from the Red River met the York Factory packet at Norway House, at the north end of Lake Winnipeg, where they exchanged packages and returned home. The western mail left Norway House

"to meet the mail from the north at Carlton House, on the Saskatchewan river, and after exchanging packages returned to Fort Garry through the Swan River district."

Early in the nineteenth century, the new settlement sought different commercial highways and different modes of travel. When the western expansion of the United States developed trading centres like St. Paul, Minnesota, 1839, at the head of the navigable water of the Mississippi, the merchants and independent fur traders sought eagerly nearer centres at which to buy and sell. Ever seeking increased areas for trading, the energetic ones turned toward the sun and marked across the prairie new trails which radiated from the commercial hub at the junction of the Red and Assiniboine. The hunters of the buffalo, the new settler, the missionary, all followed the ribbon-like guide across the prairie.

GREAT SASKATCHEWAN TRAIL.

The Great Saskatchewan Trail was a westward spoke from the hub. From Fort Garry to Portage along the north side of the Assiniboine, to the first Hudson Bay post at Fort Ellice (near the provincial boundary) stretched this primary trail. Today its winding curves are reflected in the twists and turns of Portage Avenue, Winnipeg, and in Provincial Trunk Highways No. 1 and No. 4. From Edmonton by Fort Ellice to Fort Garry, the Rev. John McDougall, a pioneer missionary, relates making a record trip without relay of horses in fourteen days in 1873.

Fort Ellice was a trading post built by the Hudson Bay in 1821 on the Assiniboine about five miles below the mouth of the Qu'Appelle River. In 1830, owing to the westward migration

of the buffalo and the competition of the Indian trade between Brandon House and the Americans across the border, it was rebuilt near the junction of the Qu'Appelle and Assiniboine. It became the port of call on this route. Here travellers were refitted and were afforded the means of crossing the Assiniboine by ferry. It became the distributing point for the Swan River district when the supplies from London, England were brought through the United States and thence to Fort Garry rather than by the northern water route. Fort Ellice continued to be the port of call for points southwest, west and northwest until eclipsed by the Canadian Pacific Railway.

Another spoke, which parallelled this historic trail to the western boundary, went from St. Boniface to Headingly on the south side of the Assiniboine river. At Portage and Headingly, shorter branches went north and south to such points as Westbourne Mission, St. Laurent, Lake Manitoba, Oak Point and Stony Mountain.

PEMBINA TRAIL.

Turn now to the spokes radiating south. To reach the markets of the south, the merchants had to cart their goods from Fort Garry to St. Cloud and St. Paul. They sought markets by the same trail which a few years before they had sought the buffalo. South from Fort Garry went the trail along the west side of the Red River, through Dakota territory for some two hundred miles, and then by crossing the Red River into Minnesota, the road led for two hundred and fifty miles to St. Paul. On Canadian soil, it is officially known today as Provincial

Trunk Highway No. 14, or the Pembina Highway. This road had its twin also on the east side of the river in the parallel trail which was not so smooth and not so dry.

Freighting over these trails became an important industry. For years, the settlers had to rely on this somewhat irregular and costly transportation as only freight belonging to Hudson Bay Company came in the steamers until 1870. Freighting was the primary concern, passenger service secondary. The individual traveller had to depend on his own efforts. Luck it was, if the would-be-passenger found a place in the freight brigade. This industry was conducted almost entirely by half-breeds who used a novel vehicle called the Red River cart.

In 1801, this two-wheeled contrivance made entirely of wood, without a scrap of iron in its make-up, not even in rim or axle, was evolved.

> "Let us, in imagination, approach the Red River settlement in the late afternoon of a day in August, 1851, with a train of Red River carts, which started northward from St. Paul four weeks ago", says F.W. Howay in "Builders of the West". "During its journey the caravan of 150 carts has kept guard against the Indians, especially while traversing the territory of the Chippewas or "Pillagers".
>
> "Each cart is drawn by an ox, and carries about nine hundred pounds of merchandise. Rivers and streams have been forded, and thus the whole train has sometimes travelled less than twenty or twenty-five miles in a day. The Red River carts are two-wheeled, and made wholly of wood; not until the closing years of the Red River era was any part made of iron. No grease is used on the axles, because experience has taught - or so it is believed - that the fine dust along the prairie trails lodged in the grease and wore down the axles and hubs. The squeaking of a loaded cart can be heard on a still day for over a mile. 'The creaking of the wheels is indescribable' wrote the poet, Charles Mair, when he came to Red River in 1868. 'It is like no sound

'you ever heard in all your life, and makes your blood run cold.'

"The driver straps a scraped buffalo skin or a piece of oiled canvas over his cart at night with a rawhide thong, and calls it a tent. He can remove the wheels, which are of a 'dished' shape, and by lashing them together and fastening the buffalo skin or canvas to them, can make a boat in which to cross a river too deep to ford. The 'dished' shape of the wheels is of advantage also in travelling along uneven or slippery ways, and in preventing the carts from toppling over.

"As we approach the Red River Settlement, the small log houses of the French speaking settlers appear among the trees along the river bank. As they near their home the Metis cart drivers don the new red sashes which they purchased in St. Paul, and knot the bright-coloured kerchiefs about their necks, or tie them round their heads like turbans. They take from the carts their private packages of gay feathers and ribbons, and the other gifts which they are bringing home. Presently their friends come riding out to greet them."

For years transportation was done in this manner over the trails to the south or to the west. At one time 1500 carts were employed on the Fort Garry, St. Paul route and nearly 700 men were employed on the western routes. The annual trek of the Red River cart is another unique mode of transportation which belongs to Manitoba's history.

Along the trails, came settlers from the south to the western prairies. By 1867, travel was improved by the introduction of the springless buckboard to Manitoba and the northwest by the new comers. This was a four-wheeled carriage in which a long elastic board or frame was used in place of body, springs and gear. It had one or more seats. The Red River cart had reigned supreme, the aristocracy of the land had had no better; now the light, easy buckboard took its place as a passenger conveyance and the Red River cart was reduced to freighting only. No more was the weary traveller forced to dangle his legs over

the front bar of the wooden coach. So time marches !

DAWSON TRAIL.

The spoke to the east remains to be described. This trail is known as the Dawson Trail, named after Mr. Simon J. Dawson, one of two who were appointed by the Canadian government in 1857 to explore the country from Lake Superior westward. Mr. Dawson made a favourable report on the feasibility of the route in 1858.. He recommended the construction of a wagon road from Thunder Bay to Dog Lake (Shebandowan), then a series of portages and roadways were to connect with Fort Garry. He estimated the total distance by land and by water from Thunder Bay to Fort Garry at 499 miles. The government, wishing to have an all Canadian route, adopted the policy. The wagon roads were built partly by government contractors and partly by the soldiers of the Wolseley Expedition.

Soldiers as road constructors is another of the incidents calling for resourcefulness and courage that make the pioneer stories of Canada interesting. A rebellion in the west, troops in the east, a difficult highway constructed but thirty miles, were the pieces of the puzzle to be fitted together in the spring of 1870.

The Wolseley Expedition overcame unbelievable difficulties. The soldiers became good men in the canoes, on the portages, and good road builders on the highway. The only damage was to their uniforms which became habits suitable for scarecrows.

A picture of travel over this eastern route can be seen through the eyes of Rev. Geo. M. Grant who discusses the journey he made in the summer of 1872 in "Ocean to Ocean". Some of his comments regarding points enroute follow:

From Prince Arthur's Landing, Thunder Bay, to the Matawan, a stream which runs out of Lake Shebandowan into the Kaministiquia -

> "Both rivers are crossed by capital bridges. "--- The road through it is good enough for a king's highway, and the mosquitoes are not more vicious than in the woods, and by the streams of the Lower Provinces;"
>
> From Matawan to Shebandowan, "The road was heavy, varying between corduroy, deep sand and rutty and rooty stretches, over which the waggon jolted frightfully."
>
> On Lake Shebandowan. - "The mode of locomotion was, to us, altogether new, and as charming as it was picturesque. The tug led the way at the rate of seven knots, towing first a large barge with immigrants, second a five fathom canoe with three of our party and seven Indians, third a four fathom canoe with two of us and six Indians, fourth same as number three, fifth M.... and L.....'s canoe. We glided along with a delightful motion, sitting on our baggage in the bottoms of the canoes."
>
> At a portage. - "The Indians emptied the canoes in a trice; two shouldered a canoe, weighing probably three hundred pounds, and made off at a rapid trot across the portage. The others loaded the waggon of the station with the luggage, and carried on their backs, by a strap passed over their foreheads, what the waggon could not take. This portage strap is three or four inches broad in the middle, where it is adjusted to the forehead; its great advantage to the voyageur is that it leaves him the free use of his arms in going through the woods." "It was impossible to avoid admiring the activity and cheerfulness with which our Indians worked. They would carry as heavy a load as a Constantinople porter, at a rapid trot across the portage, run back for another load without a minute's halt, and so on till all the luggage was portaged, and everything in readiness for starting on the next lake. The canoes were always their

"first care. As a jockey cherishes his horse, and a shepherd his collie, so do they care for and actually love their canoe."

Enroute from the northwest angle of the Lake of the Woods to Fort Garry, the points of call were stations at White Birch River, White Mud River and Oak Point. The last two named were joined by an abominable road!

At Oak Point. - "We looked out and beheld a sea of green sprinkled with yellow, red, lilac and white, extending all round to the horizon. None of us had ever seen a prairie before, and, behold, the half had not been told us: As you cannot know what the ocean is without seeing it, neither can you in imagination picture the prairie. --- A little stream - the Seine - runs from Oak Point into the Red River."

From Oak Point to Fort Garry. - "The road strikes right across the prairie, and, though simply a trail made by the ordinary traffic, is an excellent carriage road. Whenever the ruts get deep, carts and waggon strike off a few feet, and make another trail alongside; and the old one, if not used, is soon covered with new grasses."

"Thus we finished our journey, from Lake Superior to Red River, by that Dawson road, of which all had previously heard much, in terms of praise or disparagement."

In conclusion. - "In speaking of this Dawson road it is only fair to give full credit for all that has been accomplished. Difficulties have been overcome, insomuch that, whereas it took Colonel Wolseley's force nearly three months to reach Fort Garry from Thunder Bay, a similar expedition could now do the journey in two or three weeks."

"But, as a route for trade, for ordinary travel or for emigrants to go west, the Dawson road is far from satisfactory. Only by building a hundred and fifty-five miles or so of railway at the beginning and the end, and by overcoming the intervening portages in such a way that bulk would not have to be broken, could it be made to compete even with the present route by Duluth and the railway thence to Pembina."

"The station-masters and other agents on the road, as a rule, do their utmost; they have been well

"selected, and are spirited and intelligent men; but the task given them to do is greater than the means given will permit. The road is composed of fifteen or twenty independent pieces; is it any wonder if these often do not fit, especially as there cannot be unity of understanding and of plan, for there is no telegraph along the route and it would be extremely difficult to construct one."

Some of the immigration came by the Dawson route. More than a thousand settlers used this route in 1872 and 1873 and the government spent $1,300,000 in keeping it open pending the construction of a railway. Efforts to maintain a regular service had to be abandoned. An honored name, it remains on the map today and forms the base of Provincial Trunk Highway No. 12.

To the trail came transport wagon and stage coach. The former connecting with the steamers when established gave improved freighting facilities; the latter improved passenger and mail service. On September 11, 1871, the first stage coach reached the little prairie town, Fort Garry, from Abercombie. Since 1857, mail had been brought by carrier from Pembina; in 1862 it had been a bi-weekly service. After the stage coach connection it became tri-weekly. On November 20 of the same year, a telegraph line connecting the town with the American lines at Pembina was completed. True a message of ten words would cost the sender $3.05, - a small price to the homesick one. Manitoba was steadily breaking its wall of isolation.

Trail, like Red River cart, is synonymous of the pioneer days. Some of the trails which existed at the time of the transfer have been described. They had been in use

for forty or fifty years. Experience and a thorough, practical knowledge led to the establishment of these old travelled trails. When the Dominion Land and Survey Act was passed, this system was partially done away with and the survey by the block system was made for the province. On Provincial Trunk Highway No. 1, near Headingly, a cairn and tablet today marks the site where the first monument on the Dominion Lands Survey was placed July 10, 1871. Here was commenced the survey forming the basis of land tenure for the western provinces. The narrow river lots of the Settlement Belt were left. These account for some of the peculiarities of the plan of the city of Winnipeg. The local legislature, wishing to prevent the closing of the old trails, passed an Act to classify existing trails in the Settlement and later to connect them with the highways of the new survey. The trail became a highway. Hail and farewell to the trails of the prairie.

STEAMER AND FLAT-BOTTOMED BOAT.

Impetus to transportation to the south was given by the introduction of steamers as an answer to the question of a better means of freighting the ever increasing volume of trade. The southern route was more favoured than the northern by way of York Factory. In the winter of 1858-59, Anson Northrup transported materials for the building of the first steamship on the Red River. E.H.G.G. Hay came from the States to put in the machinery. The spring of 1859 the "Anson Northrup", a real live boat, arrived at Fort Garry unexpectedly, causing considerable excitement.

The Hudson's Bay Company, seeing the success of the "Anson Northrup", or "Pioneer", as it was re-named in 1882, launched the "International", a stern-wheeler, flat-bottomed vessel of the Mississippi type, a hundred and fifty feet long, thirty feet beam, drawing forty-two inches of water, with a registered tonnage of 133 1/3 tons. This steamer journeyed 200 miles south of Fort Garry to Georgetown in seven days, and arrived at the former place May 26.

In 1871, James I. Hill of St. Paul placed a steamer, called the "Selkirk", on the Red River to run between Morehead and Winnipeg. Thus was the first regular passenger and freight service placed on the route. Two more steamers, carrying freight and passengers, were put into service in May 1875. They travelled between Fort Garry and Abercombie. Stage coach and transport wagons, connecting with the steamers at these points, completed the journey to St. Paul.

In June 1877, the "Prince Rupert", a steam tug of one hundred and twenty tons burden, made a trip up the Assiniboine, laden with flour, general merchandise and telegraph wire, taking three weeks on the trip. The success attendant on this trial induced her owners, the North West Navigation Company, to put on the river service in later years, other and larger boats, and also to extend the same to other and more distant points.

This improved transportation was welcomed by the settler. By 1878, seventeen steamers were plying the waters of the province and its tributaries. Robert B. Hill in his "History of Manitoba" describes the arrival of the steamer:

"The writer well remembers the excitement amongst the merchants, the butchers, grocers, and bakers, as the whistle of the steamboat was heard turning the bend of the river at a short distance from the landing. Buckboards, buggies, and wagons of all kinds from the delivery up to the double wagon, went rattling down the River Road, the desideratum being who would get there first. Very cheering, and yet strange, that whistle sounded from the wooded banks of the river, like a voice from the great outer world breaking in on the silence and loneliness of our prairie homes."

In dry seasons the water in the river became too low for any steamers to make the trip up or down. Flat-bottomed boats were used. River transportation continued to be of importance, until, like the freighting of the trails, its star set with the dawn of a new era - the day of the railway.

Transportation of mail, freight and passengers had improved. It was as fast as steamer and fast stepping horse could make it. It was faster than ox-cart, dog-sleigh and canoe. It was too slow for the new life that was developing in the country. Immigrants were coming in but many others were following the railways of the south and were not reaching the Red River Valley. Gold was discovered in the Cariboo and the Red River settlers were the first to hear of it, but the last to reach it. It is no wonder that they began to clamour for railways.

RAILWAYS

A railroad which would link the provinces of Canada had been the dream of far-sighted men for more than half a century previous to its actual accomplishment. Without railway communication, a united Canada could not exist. Many reasons to justify the endeavour could be given. To the provinces individually, it

meant a vital factor in their material development. To Manitoba particularly, isolated by its position, it meant its very existence. To Winnipeg, it meant to be limited to one trade route to the south or to become the railway centre of a continent.

The remoteness of Manitoba is illustrated by two incidents. In eastern Canada, the province was little known. When, in 1868, the Red River Settlement was overwhelmed by a plague of grasshoppers, and collections were made for the sufferers, Rev. George M. Grant, later a principal of Queen's University, then a leading clergyman of Halifax wrote, "I could have collected the money quite as easily, and the givers would have given quite as intelligently had the sufferers been in Central Abyssinia." When in 1870, it was necessary to send the Wolseley expedition to quell the Riel Rebellion they followed, except for an initial short cut by road, the route of the Nor'Westers. Leaving Collingwood in May, they arrived at Fort Garry August 24, -- so distant was Manitoba from help in time of need or from markets with which to trade.

In January 1863, the Red River colonists made formal presentation to the British and Canadian governments, urging the construction of a railway from eastern Canada via Lake Superior to British Columbia, passing the Red River and Saskatchewan regions. By 1870, a trans-continental railway was accepted as a definite obligation to British Columbia, since it had joined Confederation. The undertaking would be a gigantic one even today, then it was unparallelled.

During 1872, an Act was passed by the Dominion parliament setting forth the terms of construction by private enterprise. However, it was necessary in 1874 to repeal this Act and the government decided to do the work itself. The hopes which the west built on this railway were not to be realized for some years. The plan to use the waterways connecting the prairies and Lake Winnipeg had to be abandoned. The prairie section of the road was to cross the Red River at Selkirk, cross Lake Manitoba at the Narrows and then follow a fairly direct line to Yellowhead Pass. The first sod on the main line of the Canadian Pacific Railway was turned on the left bank of the Kaministiquia River about four miles from its mouth on June 1, 1875.

The Grand Rapids Tramway completed in 1878, a few months prior to the Pembina Branch, can claim to be the first railway operated west of the Great Lakes. This was a narrow gauge line, using horses for haulage power, built by the Hudson's Bay Company from Grand Rapids on Lake Winnipeg, for four and a quarter miles to the navigable waters of the Saskatchewan, in order to avoid the rapids at the mouth of the river. It was by this route troops were conveyed during the Saskatchewan rebellion.

PEMBINA BRANCH.

Transportation speedier than steamer or stage was sought between Winnipeg, as Fort Garry was called after 1876, and the south. The Dominion government, on August 31, 1874, gave a contract for the construction of a branch running south from Selkirk to the International Boundary, eighty-three miles distant. It

was intended to make convenient connection with C.P.R. and no provision was made for a bridge to enter Winnipeg. Six hundred and fifty thousand dollars were voted for that purpose and the first sod was turned by Lord Dufferin, Governor-General of Canada, September 1874. The first spike was driven by Lady Dufferin three years later. Progress was slow. July 12, 1877, ground was broken at St. Boniface for the Pembina Branch.

It was October 9, 1877, that the first locomotive "The Countess of Dufferin" arrived at Winnipeg. Conveyed by the stern-wheeler, "The Selkirk" with barges in front and each side, decorated with flags, bunting, evergreens, and a banner displaying the letters "C.P.R.", it made a triumphant journey from Fargo, North Dakota. Greeted at Pembina by a salute of American artillery; welcomed at Winnipeg with whistles, bells, banners, enthusiastic citizens and a special edition of the "Free Press", which said, "Let there be a grand rally of citizens", the steamer finally reached the foot of Post Office Street (now Lombard Street) and later steamed to the spot below Fort Douglas where a track had been laid to the water's edge. The engine was run ashore on the St. Boniface side of the river. This historic engine stands today in a little park, which fronts the C.P.R. station, the former site of Fort Douglas, built in 1812.

The Pembina Branch has the distinction of employing the first locomotive in the west. Another distinction is that, when completed December 1878, it was the earliest portion of the Canadian Pacific System to be finished. This connected St. Boniface, Manitoba, with the St. Paul and Pacific Railroad and

was thus of an international character. When the last spike was driven at Rosseau, Manitoba, it was made an occasion for celebration. The first excursion in the west was run. The train, used on opening day, consisted of several flat cars and a box car in which some primitive benches had been installed, together with a quantity of straw and a small wood-burning heater. The conductor, finding no tickets had been provided, wrote on a piece of foolscap: "Ticket No. 1, Trip No. 1, St. Boniface to St. Vincent. Passenger - S. Orson Shorey, December 1878. - J. St. L. McGinn."

The first railway train entered Winnipeg, January 8, 1879, over a track laid on the Red River ice between the new city and St. Boniface. It was some years before trains could enter Winnipeg in the summer. A ferry, whimsical and erratic, was pressed into service. Tracks which were laid on the ice served in the winter months. The following interesting item is found in the "Manitoba Free Press", March 27, 1880, "The locomotive stopped running over the ice-bridge on the Red River." Regular service was established by the contractors who had the right of operation until December of 1879. They obtained a contract from the government to carry the mails. In the fall of that year, Manitoba wheat reached Minneapolis and St. Paul and at once throughout the United States the new "Northwest" was hailed as the Eldorado from which the supply of wheat, for the manufacture of fine flour was to come. At first no water tanks or turntable were available at St. Boniface, so trains returning south were run by engines tender-foremost. The line was extended to Selkirk.

To secure efficient service, operating privileges were given to interests controlled by James I. Hill who was to equip and operate the road until the main line from Lake Superior could be finished. This gave satisfaction to the northwest as it encouraged immigration from over the border. Railway communication between Manitoba and the outside world was an accomplished fact.

CANADIAN PACIFIC RAILWAY.

Construction on the main line continued slowly. By the end of 1878, more than one hundred miles of track were built from each extremity of the Thunder Bay section of the Pacific Railway; also 199 miles west of Selkirk, a start having been made in Manitoba during June, 1875; while by December, 1878, twenty-two miles were in actual operation between St. Boniface eastward under government operation and maintained service despite unfavourable weather and inadequate equipment.

The people of Winnipeg renewed their efforts to have the railway cross the Red River at Winnipeg rather than Selkirk. The city agreed to pay $200,000 as their share to the South-Western Colonization Railway Company who secured a charter to build a bridge and railway over the river. The Dominion, recognizing their determination, consented to build a branch line to connect Selkirk and Winnipeg, if the city would construct a bridge to give the line entry to the city. August 26, the first freight train crossed the pile bridge at Winnipeg.

The Dominion Government, under Sir John A. MacDonald, eager to promote its railway policy, was frustrated when capitalists hesitated to invest money in the enterprise. It was generally

realized that a change in construction would be necessary if the task were to proceed satisfactorily. Accordingly, on February 17, 1881, a charter was given to a group of capitalists who were destined to become famous the world over as the builders of the Canadian Pacific Railway.

By its terms, all constructed track on the prairie was transferred to the new company. Winnipeg was made the centre of operations, for their immediate returns were in sight from the heavy incoming settlement from St. Vincent and the government had already contracted for the line 200 miles west of Winnipeg. Surveyors relocated and shortened the line to Portage.

In Manitoba, 214 miles of track were laid during 1881. Work was pushed. It was decided to cross the Red River at Winnipeg. This deviation caused a big bend at East Selkirk; when a second track was necessary, some years later, a cut-off was built from Winnipeg to Molson, westbound traffic taking the old route via Selkirk, and the eastbound, the new shorter one. On July 26, 1881, the Canadian Pacific ran its first train into Winnipeg over the Louise bridge, built by the city and the Southwestern Railway. By November of the same year the road was operating to Brandon which in a year grew to a town of one thousand. Winnipeg was booming. The rails advanced across the prairie were accompanied by a townsite boom, as described by a conductor, "wherever there's a siding, there's a town; and where there's a water tank and a siding, there's a city."[2]

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2 Thompson & Edgar - "Canadian Railway Development".

Loud cheers from the assembled people, piercing whistles from the engines standing nearby, greeted the long line of cars rolling down the track from Louise bridge over the Red River, the first trans-continental train. The engine was adorned with bunting, flags and a banner with the words "From Ocean to Ocean". The trip had been a triumphal run. Here a civic welcome was tendered, the train was inspected, and it went westward drawn by another gaily decorated engine. Nine short years before, many who viewed this scene, had welcomed the first steamer to come up the Red River. It had seemed a memorable occasion but its significance was dimmed. A new era lay before the west.

PROVINCIAL RAILWAYS:

While the Canadian Pacific Railway was being constructed, the province of Manitoba became impatient for better transportation facilities. The farmer wanted more markets and wanted these markets made more easily accessible. The government resolved to encourage local efforts and to bonus such enterprises by every means in its power. However, they ran up against a snag -- the monopoly clause in the Canadian Pacific charter. By this agreement, the Dominion government was not to authorize the construction of any line running south from the main line to any point within fifteen miles of the International Boundary. Nevertheless, the province enacted legislation for the building of railroads -- namely, Manitoba South-Eastern, which was to build a line southeasterly from Winnipeg to the International border; Emerson and North-Western

Railway, Manitoba Central and the Winnipeg and Hudson Bay Railway, only to have them disallowed by the Dominion. Feeling ran so high it threatened to disrupt the Federation.

In 1881 the first sod of the Westbourne and Northwestern Railroad was turned at Portage la Prairie. In 1882 thirty six miles of track was laid to the town of Gladstone. Before the end of 1885, the Manitoba South-western Branch had been completed for a distance of 120 miles. The Manitoba and North-western Railway, a semi-independent line running northwesterly from Portage la Prairie and serving a very productive district, was begun in 1883. By the end of 1885, 130 miles of the road was in operation. This gave railway facilities to an important part of the province not served by the Canadian Pacific Railway. The government assisted the Hudson's Bay Railway - during 1886, some forty miles of this railway were graded and laid with rails. As a decisive step towards freeing the province from the clutches of the monopoly, it was decided to authorize the construction of the Red River Valley Railway (subsequently the Northern Pacific). Other competing systems of roads, the Northern Pacific from Portage la Prairie and the Morris and Brandon road, found their way into Manitoba and to Winnipeg.

In the fall of 1888 came the final duel between the Canadian Pacific Railroad and the Manitoba and Northern Pacific. Backed by the Provincial government, the Northern Pacific determined to cross the track owned by the Canadian Pacific Railroad at Fort Whyte, a point just outside the city of Winnipeg. The Canadian Pacific were equally determined that they should not

cross. The "double dare" continued for the space of five days. Both sides had police and guards stationed and it appeared as if rioting would break out at any moment. However, the incident ended in a draw. The question, taken to court, was settled in favour of Manitoba and this judicial decision resulted in an era of rapid railroad extension.

In this period of expansion, the Canadian Pacific continued its aggressive policy. It acquired the Manitoba and North-western and the North West Central in 1900. These were extended and made integral parts of its systems, older branches were extended also, and new branches were constructed in various parts of the province.

CANADIAN NORTHERN RAILWAY (CANADIAN NATIONAL).

A new factor entered the development of Manitoba's transportation facilities, the Canadian Northern Railway. The Northern Pacific Company had taken over the Red River Valley Road which the government had promoted as the spearhead of attack against the monopoly. In 1889, this company was operating 266 miles north of the boundary and was responsible for considerable of the 1,100 miles of railway which came into operation under the premiership of Mr. Greenway. It was transferred to the Canadian Northern by Mr. Roblin.

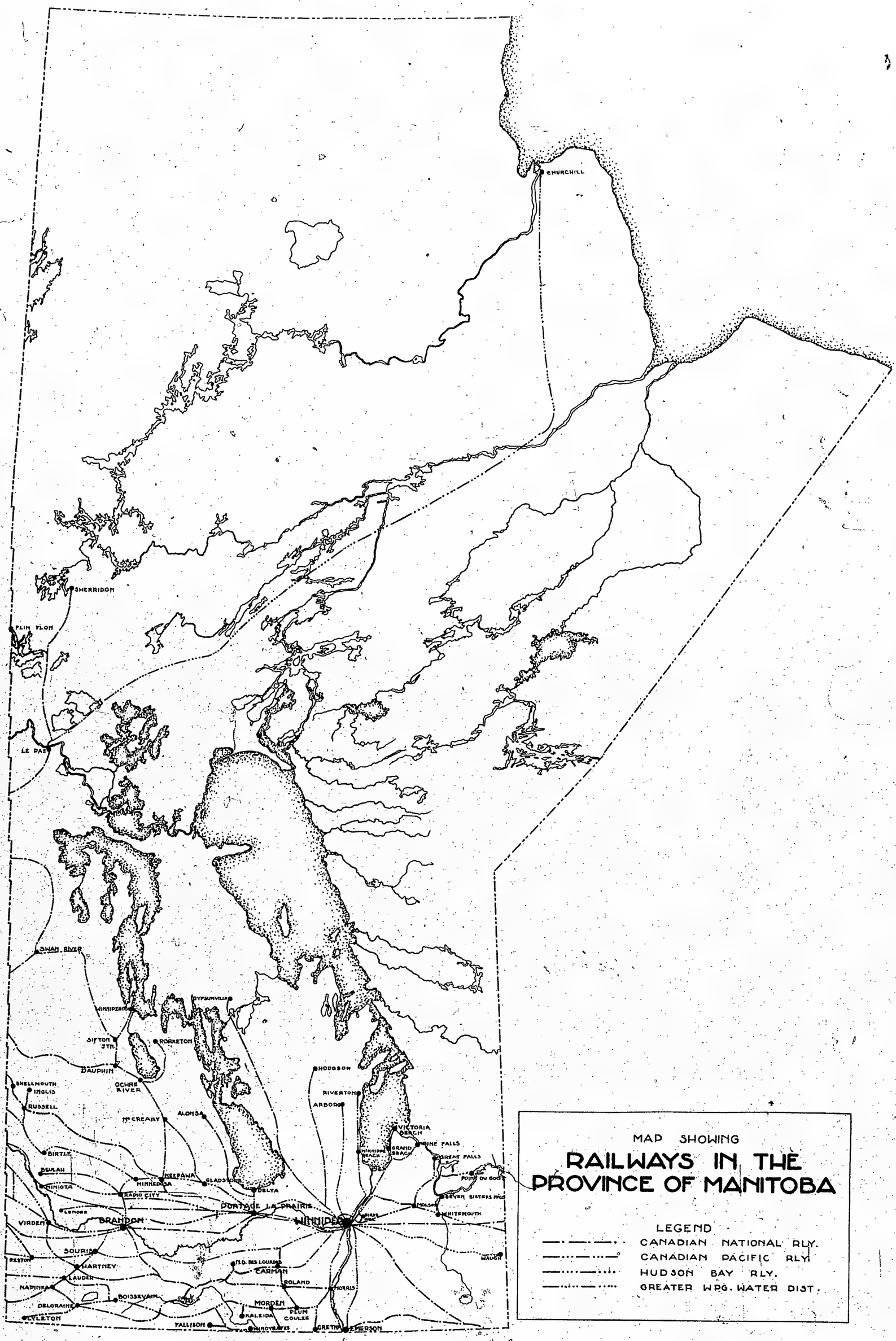
The title "Canadian Northern Railway" was first adopted in 1901 by the promoters Mackenzie and Mann, who acquired the charters of several small companies and combined them into one. In 1898, known as the Manitoba and South Eastern, they commenced a line to Lake Superior for shipment of wheat. Beginning humbly

with two engines, fifty new freight cars, two second-hand passenger cars, and an uncertain number of flat cars borrowed without permission from the Canadian Pacific, it carried cord-wood from the swamps, thereby being dubbed "The Muskeg Limited". In a seemingly haphazard fashion, lines were acquired, lines were constructed, and property for terminal purposes was secured in Winnipeg.

In March 1904 the company offered various concessions to the city of Winnipeg, in return for the closing of Broadway East, the old thoroughfare in days of ferry and cable. The company was to build locomotive and car shops in Fort Rouge, a Winnipeg suburb. A fine station, faced with Manitoba Tyndall stone, was ready January 1913. It was known as the Union Station since shared with the Grand Trunk Pacific. The last spike of the second trans-continental railway, which began in 1896 with 125 miles in Manitoba, was driven at Basque, British Columbia in 1915, but owing to the war, the achievement passed unnoticed. This pioneer railway, during its twenty-six years of independent operation, induced settlement in the northern areas of the prairie provinces. In 1918, its separate entity was brought to a close when it passed under control of the Dominion Government.

GRAND TRUNK PACIFIC (CANADIAN NATIONAL).

In the meantime, a third railway company, the Grand Trunk Pacific, reached an agreement with the Dominion government to build jointly the third trans-continental line, running through entirely new country, with a new port on the British


MAP SHOWING
RAILWAYS IN THE PROVINCE OF MANITOBA
LEGEND
CANADIAN NATIONAL RLY.
CANADIAN PACIFIC RLY.
HUDSON BAY RLY.
GREATER WPG. WATER DIST.
CHURCHILL
SHERRIDON
FLIN FLON
LE PAS
SWAN RIVER
WINNIPEGOSIS
SIFTON JTN
ROSSETON
DAUPHIN
OCHRE RIVER
SHELLMOUTH
INGLIS
RUSSELL
McCREARY
ALONSA
NEEPAWA
MINNEDOSA
GLADSTONE
DELTA
BIRTLE
DEVLAU
MINIOTA
RAPID CITY
VIRDEN
BRANDON
PORTAGE LA PRAIRIE
WINNIPEG
SOURIS
HARTNEY
LAUDER
NAPINKA
DELORAINE
BOISSEVAIN
FALLISON
MORDEN
KALEIDA
PLUM COULER
CARMAN
ROLAND
MORRIS
GRETNA
EMERSON
NODGSON
RIVERTON
ARBORG
VICTORIA BEACH
GRAND BEACH
PINE FALLS
GREAT FALLS
POINT DU BOIS
SEVEN SISTERS FALLS
WHITEMOUTH
NAGISH

Columbia coast, and capable of being conveniently linked up with the existing network in southern Ontario. The Bill authorizing this venture was presented by Sir Wilfred Laurier July 31, 1903 and became effective October of the same year.

As soon as the necessary surveys for the national transcontinental road could be made, construction began at several points and was pushed forward energetically. The government built its division eastward from Winnipeg; and the company, starting at Portage la Prairie, pushed its division westward across the plains. The first through train from Winnipeg reached Prince Rupert, the western terminus, April 9, 1914. Joint service with the Canadian Northern from the Union Station began January 3, 1913. During the Great War the federal government took over the management of the independent railways -- except the Canadian Pacific. July 1920, the Board of Directors who were administering the affairs of the Canadian Northern were made managers of the Grand Trunk Pacific Railway. The amalgamated lines were known as the Canadian National Railway.

HUDSON BAY RAILWAY.

Manitoba had early wanted an outlet to the sea. This idea of a seaport in the centre of the Dominion had a particular appeal to all the settlers of the prairie. In 1884 a special committee of the Legislature reported in favour of the route. In 1886, as mentioned before, construction began. If ever a railway were born to be the bone of contention, this was! Its mileage may be less than the other principal

railways, but the history of the hopes, fears, political wranglings and journalistic arguments it occasioned, are certainly as great. Two arguments - to build or not to build, to go to Churchill or to Port Nelson - were debated by the Canadian public for half a century.

The first forty miles built to Oak Point from Winnipeg in 1886 was never used owing to financial difficulties. Eventually, the rails were taken up. Hope flamed again in 1896. The line was built to The Pas, 498 miles north-westward of Winnipeg. Not until 1910, was any further work done. By 1913, eighty miles of track had been laid. Port Nelson was selected as the terminus. Conditions of the Great War stopped construction, when only 100 miles from the seacoast. In 1923, it received attention again. The road was reconditioned in the next two years. In 1927, Churchill was chosen as the terminus and work continued steadily.

Surveying from mile 356 to the chosen port was done in the two ensuing winters, as it is more feasible in swampy or "muskeg" country to work when the ground is frozen. The method to conquer the "muskeg" was that used previously in the construction of the Flin Flon railway, which will be described later. Finally completed, the first shipment of twenty-four cars of wheat arrived at Churchill, Manitoba, September 2, 1931. "S.S. Farnworth" and "S.S.Warkworth" transported the trial shipment of 540,000 bushels of wheat arranged by the Canadian government to prove the feasibility of the Hudson Bay route.

FLIN FLON RAILWAY.

When Manitoba's boundaries were extended in 1912, it added a territory which had been the exclusive precinct of fur traders and Indian trappers. Suddenly, interest was aroused in the dormant possibilities of this great area lying at Manitoba's own doorstep. The result has been almost unbelievable - the growth and establishment of a metallic mining industry in twenty years where none existed before. When important ore-bodies have been discovered, the question of transportation to these must be answered.

Transportation into the new field of the Pre-Cambrian area, particularly the provision of transportation of heavy traffic, constitutes a serious problem. A serious problem that is not without the romantic and the spectacular. Though the distance may not be great, the character of the country, rocky, forested, muskeg, river, makes many a new find inaccessible. The routes can not be called direct or easy. Seasonal vagaries present problems in themselves. Think of the ore coming from Mandy mine in 1918 to The Pas for transportation, by boat, tractor, tug, team hauling, steamer, another team haul, then finally the railroad. The annual moving of freight presents a major operation, important and demanding, to all interested in mining, directly or indirectly.

The building of the Flin Flon railway was a meritous achievement. Across an intervening maze of large and small lakes, bush, muskeg, and rocks, before either Flin Flon or its neighbour Sherritt-Gordon could be made into producing mines,

well over one hundred thousand tons of machinery and other material had to be taken. Month after month, convoys passed into the wilderness, as many as fifty and more teams in a single group, recalling the old days of the covered wagon and Red River cart trains. The building of this railway resulted in evolving a method new in the construction of railways - a method to conquer the muskeg.

The muskeg froze solid in winter and frost came out very slowly in summer. In the winter the rails were laid across the frozen muskeg and freight run in at once. Then ballasting was done in the following summer. Foolhardy as it seemed, it worked. The ballast acted as an insulator and the ground under the rails remained solid. For all time, the trains on the Flin Flon and Sherritt-Gordon railways will run over frozen muskeg.

Since 1929 the Flin Flon railway has been a considerable asset in conquering the north. This busy railway is going to be to northern Manitoba what the famous T. and N. O. railway is to Ontario, what the Rouyn line to Noranda is to Quebec. It is the base for advance north, west and east by prospectors who travel by canoes or by aeroplanes.

LAKE WINNIPEG WATER TRANSPORTATION.

Though the railway supplanted the steamer passenger and freight service there is considerable traffic between the city of Winnipeg and points on Lake Winnipeg. The St. Andrew's Rapids on the Red River were for years a serious obstacle to developing this waterway. The people made persistent effort to

interest governments in building a dam and a lock by which the difficulty of taking vessels over the rapids would be eliminated. But surveys were made, reports were given and nothing done. Finally the weight of public opinion made itself felt. A contract was given for construction of dam and lock in January 1900. This work was stopped. New plans were made in 1906 and 1910, vessels of considerable draft could pass readily between Winnipeg and the lake.

Every new line of railway within Manitoba which facilitated the marketing of her products and the importing of necessary products is a factor in the development of the country. By means of railways, the province has passenger, freight, mail and telegraph service, not only within its borders but with all the world. Constant improvement is being made in the service. Engines and cars of today are marked contrast to those which crossed the southern plain, carrying bleached buffalo bones for freight.

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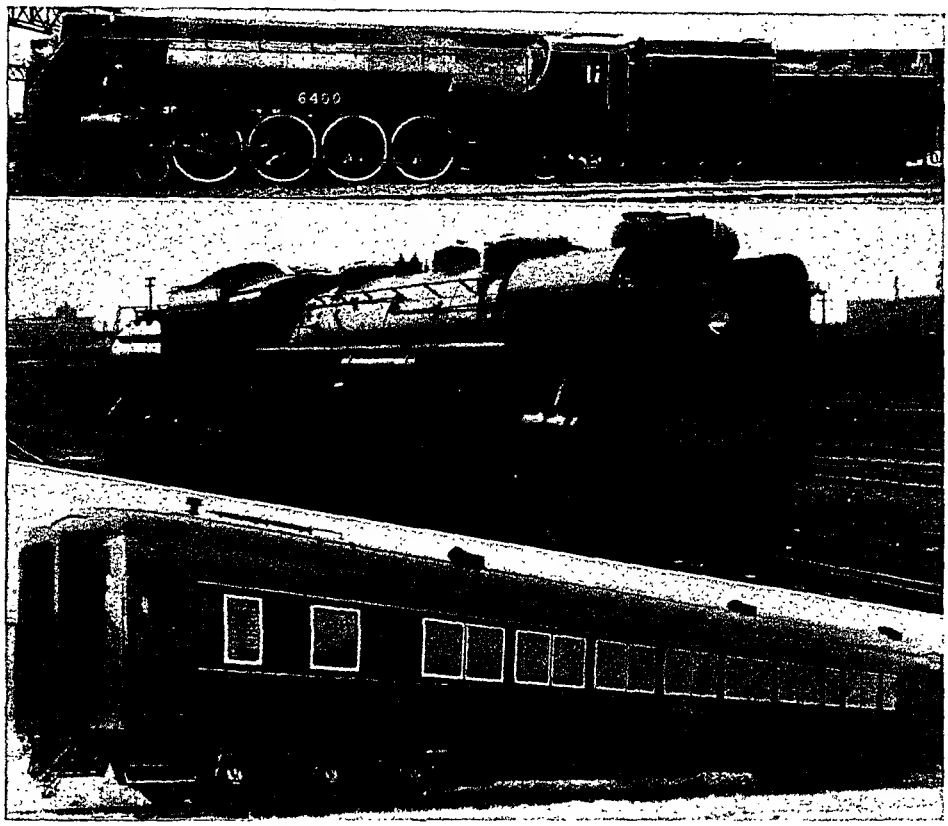
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CHAPTER II

TRANSPORTATION SERVICES

"In the development of every country the transportation facilities are probably the most vital element of the entire material equipment. Not only in effecting the settlement of the country, in the first place, but at every stage of its subsequent progress, the means of communication and conveyance are of paramount importance. This is particularly true, of course, in the case of a country like Canada with a great expanse of territory; for the products of the country, agricultural and industrial, cannot become great sources of wealth until the surplus of one section can be conveyed to other sections or markets where there is a demand for these products. Where then, as here, there are rich natural resources providing in abundance the food supplies of the consuming markets and the raw materials of industrial establishments, it is highly important that the facilities for conveying these food products and raw materials to the places where they are required should be ample, and it is equally important that the conveyance of industrial and commercial products, manufactured at home or imported from abroad, should find adequate transportation at reasonable cost to the urban and rural markets where there is a demand for them. The economic life and development of nations have been built upon the exchange of commodities, and the more satisfactory the system of exchange the greater the opportunity for accumulation of wealth. This applies equally to domestic and to foreign trade, to trade between different sections of the same country as well as to trade between countries."[1]

[1] Jackman. "Economic Principles of Transportation". The University of Toronto Press, 1935.

A FUNDAMENTAL SERVICE

In these days of scientific progress, there is a tendency to take for granted the existence of those things that we have come to regard as a part of our normal existence, and so with transportation. It is here -- we use it without thought as to how that facility came to be present, the human achievement which lies behind it and the essential service which it renders.

The primary function of transportation is to carry goods and people -- to carry them from one place to another. This primary service when one considers it in its broadest aspects, lies behind modern development. Today transportation services are at the peak of their development. Speedy, palatial liners and the humble tramp cover the waterways of the world. The railways provide services today which were undreamed of even a quarter of a century ago. Regular services are provided to all parts of the settled areas in Canada, in a net-work of railways which provide for the continuous exchange of commodities and service. Aeroplanes are performing the transportation function in the more remote parts of the country and modern air liners are about to link Canada from east to west in the carrying of mail, passengers and express. Thus, behind the commerce of the world, behind the economic life of Canada, lies the fundamental services which are being rendered by agencies of transportation.

One cannot but recognize the human achievement which is bound up in the history of transportation. From the days when Robert Fulton built the first successful steamboat, the

"Claremont", which traversed the Hudson River from New York to Albany in 1807; from the days when George Stevenson's steam locomotive was first operated on the Liverpool and Manchester railroad in England in 1829; transportation has seen a continuous era of progress. These men were but the forerunners of a host of others who have applied their talents and their energies to problems of transportation, out of which have developed the services which we have today.

The services of transportation facilities go far beyond the mere transportation of goods and people. They have given value to the commodities which they carry. Without the service of the railway or other transportation agency, the area within which a seller could dispose of his product is relatively small and the surplus of his product, beyond that which could be sold in his local community, would have little value. The railways and steamships have opened up markets hundreds and perhaps thousands of miles away and as a result the value of surplus products has been enhanced. Thus in its essential service transportation does not then haul tons of commodities so many miles; it gives market value to that which it carries and in so doing becomes an integral part of the economic life of the community.

During the World War, shipping was very scarce and it was impossible for the Australian wheat farmers to find transportation to take their grain to Europe where the keenest possible demand existed. As a result, wheat piled up in Australia, a relatively worthless commodity, because there was no means of getting it to the markets of the world. The channels of communication between Canada and the allied nations were kept open

and Canadian farmers experienced the highest grain prices in history as they were able to get their product to a hungry Europe. So important is transportation in relation to the modern organization of industry and agriculture.

In the early days of railroad transportation, the essential services of the railway were probably greater appreciated than they are today. As the ribbons of steel pushed inland, people became conscious of a transformation in their economic existence and in their mode of living. It is not unreasonable, therefore, to find early speculation as to the effect of this new facility which was being created. There appeared in United States Journals in 1852 and 1853 the following tabulation:

ESTIMATED VALUE OF WHEAT AND CORN PER TON AT DIFFERENT DISTANCES FROM MARKET, UPON A RAILROAD AND UPON A COMMON ROAD

	Railroad		Ordinary Road	
Miles	Wheat	Corn	Wheat	Corn
0	49.50	24.75	49.50	24.75
10	49.25	24.60	48.00	23.25
20	49.20	24.45	45.50	21.75
30	49.05	24.30	45.00	20.25
40	49.00	24.15	43.50	18.75
50	48.75	24.00	42.00	17.25
100	48.00	23.25	34.50	9.75
150	47.25	22.50	27.00	2.25
160	47.10	22.35	25.50	.75
170	46.95	22.20	24.00	-
200	46.50	21.75	19.50	-
250	45.75	21.00	12.00	-
300	45.00	20.25	4.50	-
320	44.70	19.95	1.50	-
330	44.55	19.80	-	-

Note: According to Locklin in "Economics of Transportation", this table appeared in the American Railroad Journal, Vol. XXXV, page 705 (1852), and in the Merchants' Magazine and Commercial Review, Vol.XXIX, Page 388 (1853).

The purpose of the foregoing table was to show that until the advent of the railroad wheat and corn could only be transported a relatively short distance until the costs of transportation exceeded the value of the commodity. Corn could be moved about 125 miles and wheat about 250 miles, for longer distances the cost of transportation became so great that grain could not be profitably produced in excess of local requirements. With the advent of the railroad, however, corn and wheat could be transported tremendous distances and still make a return to the farmer.

The railway, therefore, ended the need for local self-sufficiency. Without adequate means of transportation, frontier communities were dependent upon their own resources. They had to look after the entire gamut of their needs. With the advent of the railway, this was all changed. Products from hundreds and even thousands of miles were made available to the areas through which the railways passed and the need for a self-sufficient community rapidly disappeared.

This fact in itself was important in connection with the economic and social life of the communities which received railway services. But it also brought a new development which has become the characteristic of modern economic organization. This development was the introduction of specialization in respect to production. Being freed from the necessity of producing the greater part of their own material wants, areas served by railways were able to specialize in the production of those things which they could produce most efficiently. Thus emerged the specialized economic organization which is so

manifest today; cotton in the southern States, grains in the middle western States, industry in New England and the eastern States, the wheat fields of western Canada. These specialized industries have assumed tremendous proportions, produced enormous surpluses which the development of efficient transportation has made possible. Thus the progress in human efficiency, and the fact of regional specilization, emerged from the growth of the modern transportation era. Nowhere is this development more noticeable than in western Canada. Railroads net-worked the prairies and brought mass settlement. Farms in western Canada began to produce many times their own requirements in wheat and other grains, as the advent of efficient transportation brought the consuming markets of Europe relatively close to the western plains.

In recent years the modern world has witnessed something which might be described as the turning back of the wheels of progress; brought about by an endeavour to return to the economics of self-sufficiency in a world which is built upon the foundations of specialized activity and the free use of transportation developments of the past hundred years. Let us not forget that transportation services were in no small part responsible for the building up of specialized production and that any departures from that trend or any attempt to retrogress to self-sufficiency is laying, and will lay, many problems and unexpected problems upon transportation facilities as well as upon those producers who have built their industries upon the basis of international specialization.

There are other features of transportation, and especially of railway transportation, which are reflected in the economic organization of our country and in the normal flow of business activity. The railway provides a continuous service and, therefore, permits the continuous flow of commodities between near or distant points, and as a result plays an important part in the endless flow of transactions which go to make up the nation's business.

The railways also render an important service in that wherever they have gone they have taken with them a speedy form of communication, namely, the telegraph. For many years, the communication systems operated by railroads provided the only means of rapid communication between distant points. The telegraph system of the railways still plays a major part in the systems of communication, is one of the essential foundations of modern business and at the same time serves a highly important social purpose. In a country such as Canada, where distances are so great, the speed and accuracy of telegraphic messages are of inestimable importance.

Nor can we omit reference to the fact that railway service as it exists today in Canada and other countries, is a very important fact in the stabilization of business and economic activity. The prices of raw materials fluctuate daily and in many cases, hourly. The element of risk involved in price changes in respect to all those commodities which are required by a modern economic organization and the fluctuations in the volume of those commodities which may be required within a given period, all tend to make for risk as it is understood in

business today. The one stable factor in the economic life of Canada is the fact that railways provide their services at fixed, known and understood charges. The freight rate structure as it exists in Canada may be too high or too low according to individual viewpoint; it may or may not be satisfactory to all regions within the national economy, but, nevertheless, this fundamental fact remains that freight charges are a known quantity in connection with any business transactions. Shippers or receivers, or anyone interested directly or indirectly in transportation, can ascertain at all times -- at the time of shipment or in advance of shipment -- what freight costs are going to be. For this reason, buying and selling can take place freely in all parts of the country because transportation costs are fully known to all parties. Buyers and sellers may enter into contracts for future delivery knowing that the railways will perform their services for a fixed remuneration and that their charges today will be the same tomorrow and the day after. Thus railway services constitute a very important stabilizing factor in the economic life of the country and play an important part in the maintenance of business.

In considering the services which railways render, it is important to understand that railways, as such, meet every demand placed upon them in respect to transportation. They convey everything which is offered to them, whether that transportation job be large or small. A large percentage of the western wheat crop moves to terminal markets in three months every fall. This is the largest single freight job in Canada, and yet the railways in the normal course of their operations

provide the necessary transportation and transportation facilities even though an important part of the necessary equipment to move the western wheat crop must lie idle for the greater part of the year. Thus railways provide the transportation facilities which are required by every individual engaged in productive activity in Canada.

CHAPTER III

THE RAILWAY ERA

Before the development of the steam railway, overland transportation was extremely hazardous, extremely slow and extremely expensive, and for these reasons the greater part of the world's commerce, prior to a little over one hundred years ago, was carried by water transportation. This fact accounted for the early development of maritime ports and their strategic importance in the world of commerce. The steam engine became a practical instrument of transportation in 1829 and consequently the era of inland transportation on a mechanized basis really goes back only a little over a century. The Baltimore and Ohio Railroad in the United States is generally accepted as the first railroad constructed for general transportation purposes. A portion of this railroad was opened in 1830, a year which marks the beginning of the railroad era in the United States. The past century has therefore witnessed the construction of the first railway system covering, and thoroughly covering, the settled areas of the United States and Canada.

The following table shows the railway mileage in Canada and the United States:

RAILWAY MILEAGE IN CANADA AND THE UNITED STATES

	United States	Canada
First main tracks	256,741	42,916
Second main tracks	42,397	2,507
Yard tracks & sidings	126,526	57,171
	425,664	102,594

U.S. mileage for 1933, Canadian mileage for 1935.

It will be noted from the above table that there are some 300,000 miles of first track lines in Canada and the United States, as well as about 230,000 miles of second track and yard and siding track. This broadly represents the trackage which supports the enormous rail transportation of the United States and Canada.

It is interesting to note the manner in which this railroad track mileage was built up. The following table shows railway mileages in Canada and the United States at various intervals:

	United States	Canada
1830	22	-
1840	2,818	22
1850	9,021	66
1860	30,676	2,060
1870	52,922	2,617
1880	93,262	7,194
1890	163,597	13,151
1900	193,346	17,657
1910	240,293	24,731
1920	252,846	38,805
1930	249,052	42,047

It will be noted from the above table that in the United States railway expansion was particularly marked during the years from 1870 to 1910. During these years about 197,000 miles of main track was constructed, or an average of about 4,900 miles per year, or more than the equivalent of a trans-continental line from

New York to San Francisco in each year between 1870 and 1910. This comparison gives some idea of the intensity of railway development in the United States in the last thirty years of the last century and the first ten years of the present century.

Canada was somewhat slower in railway development than the United States, construction starting later and continuing after the United States had finished. The period from 1880 to 1920 witnessed the expansion of Canadian railway mileage from 7,194 miles to 38,805 miles. It is significant to note that on a population basis, railway expansion in Canada has been much greater than in the United States. With approximately twelve times the population of Canada, the railway mileage in the United States is only about six times that of Canada. Thus in Canada a relatively small population is now being served by a relatively large railway development.

This amazing railway development in both Canada and the United States in the years preceding the World War, is important from the standpoint of the development of both countries, but we wish particularly to refer to another manner in which the railways played an important part in both countries.

When one considers that the railroads of both Canada and the United States were largely constructed by processes involving human and animal labour, and when one considers the natural difficulties confronting railroads in North America, such as the crossing of mountains, it is apparent that the era of railroad construction meant an era of vast employment, both in Canada and the United States. This employment was not alone confined to the thousands and thousands of men who actually built

the grades and laid the steel, but extended to many more thousands who provided the necessary materials used in railroad construction. Of necessity a large part of the labour employed in the construction of railroads was unskilled - it was hard, manual labour.

The years of intensive construction of railways in Canada and the United States were also years of immigration when peoples came, mainly from Europe, to seek new opportunities in Canada and the United States. The construction of railways provided many thousands of immigrants with their start in the country of their adoption and for these people the construction of railways provided the means whereby they were able to establish themselves at a later date in economic activities in both countries. It is not without reason to say that for the period from 1870 to 1910 in both Canada and the United States, railway construction acted as the unemployment insurance of that period. It was particularly significant in that it gave employment to those who would now be called "unskilled" labourers.

The era of railroad building in Canada and the United States came to a stop rather suddenly. The railroads of Canada and the United States were largely built by the time of the World War and the question naturally arises - what of this army of labourers who for years in the early development of Canada and the United States found a livelihood in the building of railways? What new avenue of employment has opened up to give employment to such a wide range of skill? What of the army of men who, for the greater part of their working days were engaged in the construction of railroads and suddenly found their job completed?

It is true that other heavy industries have developed, but in Canada, and more particularly western Canada, we still feel the repercussions in the sphere of employment from the cessation of railroad construction - a field of employment, particularly for unskilled labour, has been lacking since railway construction has largely come to a standstill.

RAILWAYS IN WESTERN CANADA.

The degree to which railways have built facilities in western Canada and the degree to which they are interested in the economic position of western Canada is indicated by the mileage constructed to date. The following table shows railway mileage in each province in Canada, along with the 1936 population and the mileage per 1,000 of population in each province:

Province	Mileage	1936 Population	Mileage per Thousand
Prince Edward Island	286	92,000	3.108
Nova Scotia	1,397	537,000	2.601
New Brunswick	1,871	435,000	4.301
Quebec	4,777	3,096,000	1.543
Ontario	10,746	3,690,000	2.912
Manitoba	4,860	711,000	6.835
Saskatchewan	8,624	931,000	9.263
Alberta	5,687	772,000	7.367
British Columbia	3,907	750,000	5.209
	42,155	11,014,000	

The above table shows that the prairie provinces have the largest railway mileage per 1,000 of population of any province in Canada. Manitoba has 6.835 miles of railway line for every 1,000 of population, Saskatchewan 9.263 and Alberta 7.367; compared with 2.912 in Ontario, 1.543 in Quebec and slightly higher figures for the maritime provinces.

The railway position in western Canada may be shown in another way, that is by the percentage of mileage in each of the provinces in Canada. These data are shown in the following table:

Province	Mileage	Per Cent
Prince Edward Island	286	.7
Nova Scotia	1,397	3.3
New Brunswick	1,871	4.4
Quebec	4,777	11.3
Ontario	10,746	25.5
Manitoba	4,860	11.5
Saskatchewan	8,624	20.5
Alberta	5,687	13.5
British Columbia	3,907	9.3
	42,155	100.0

The above table shows that the prairie provinces with 21% of the total population in Canada in 1936, had 45% of the railway mileage in Canada. These figures give some indication of the extent to which the railway systems in Canada invested in western Canada and placed their hopes in the development of this area.

Provincial Government Aids to Railways

In Statement No.3 of the Appendix will be found a summary of aids to railways by the province from the year 1885 to April 30, 1937, as per Public Accounts. It will be noted that the only outstanding indirect liabilities are the $3,000,000 bond guarantee of the Canadian Northern Railway and certain rentals payable to the Northern Pacific Railway in respect to certain leased railways.

It will also be noted that of 256,000 acres of railway lands transferred to the province that approximately 48,000 acres are still held by the province.

RAILWAYS AS TAXPAYERS

The railways in Canada bear a substantial share of taxation, and as this study is primarily devoted to transportation in Manitoba, the amount of taxes paid by railraods in this province will be considered. The following table shows the revenues of the provincial government from railways in Manitoba, from 1924 to 1937:

STATEMENT OF REVENUE FROM RAILWAY TAXES TO THE NEAREST THOUSAND DOLLARS FOR THE FISCAL YEARS 1924 to 1937, INCLUSIVE (1)

Fiscal	Year	ended	31st August,	1924	$ 328,000.00
"	"	"	30th April,	1925	218,000.00
"	"	"	"	1926	607,000.00
"	"	"	"	1927	588,000.00
"	"	"	"	1928	461,000.00
"	"	"	"	1929	462,000.00
"	"	"	"	1930	461,000.00
"	"	"	"	1931	509,000.00
"	"	"	"	1932	607,000.00
"	"	"	"	1933	604,000.00
"	"	"	"	1934	604,000.00
"	"	"	"	1935	605,000.00
"	"	"	"	1936	705,000.00
"	"	"	"	1937	605,000.00
					$ 7,364,000.00

It will be noted from the above table that during the fourteen years shown above the railways of Manitoba contributed $7,364,000 in taxes to the provincial government. The maximum taxes paid by the railroads in Manitoba amounted to $705,000 in the fiscal year 1936.

In addition to taxes paid to the provincial government, railroads also pay considerable taxes in a smaller degree. The following table shows the total taxes paid by railroads in the province

(1) Data provided by the Department of the Comptroller General, Government of Manitoba.

of Manitoba, and the taxes per mile of railway line, from 1926 to 1936:

TOTAL TAXES PAID BY THE RAILWAYS OF MANITOBA

Year	Amount	Single Track Mileage	Per Mile of Line	Per Sq.Mile of Land
1926	$657,509.20	4,296	$ 153.05	$ 2.99
1927	552,463.38	4,293	128.69	2.51
1928	550,179.62	4,293	128.16	2.50
1929	552,992.12	4,294	128.78	2.52
1930	543,914.58	4,420	123.06	2.48
1931	696,634.44	4,420	157.61	3.17
1932	683,818.18	4,420	154.71	3.11
1933	673,760.01	4,433	151.99	3.07
1934	669,461.62	4,459	150.13	3.05
1935	675,118.71	4,970	135.84	3.07
1936	672,927.45	4,860	138.46	3.06

It will be noted that total railway taxation in Manitoba during the years shown in the above table ranged from $123.06 per mile of trackage in 1930 to $157.61 per mile in 1931.

Valuing money at 4 per cent, the amount of taxes paid by railroads in 1936 in the province of Manitoba indicates that municipal and provincial governments had the equivalent of a mortgage of $3,461.50 on every mile of railway within its boundaries. These figures indicate that railways have made, and are making, an important contribution to the support of governmental services in the province of Manitoba.

The taxation of railways may also be examined from a population standpoint. The following table shows the taxes paid by railways in Manitoba per thousand of population, from 1926 to 1936:

Year	Amount	Year	Amount
1926	$1,028.96	1932	$964.48
1927	848.64	1933	948.96
1928	828.58	1934	941.58
1929	816.83	1935	949.53
1930	789.43	1936	946.45
1931	995.19		

In 1926 railways paid taxes amounting to $1,028.96 per thousand of population and in 1936 they paid $946.45 per thousand of population.

The taxes shown above are the total taxes paid in the province by the railways and include provincial, municipal and special taxes.

Of the $672,927.45 paid in the year 1936, $608,210.67 was provincial tax, the balance being municipal and special taxes. With a railway mileage of 4,860 in the province, the provincial tax averaged $125.15 per mile of line.

The total provincial taxes paid by all the railways in Canada to all provinces totalled $3,361,758.23. The railway mileage was 42,213, so that the average provincial tax for the whole of Canada averaged $79.64 per mile of railway, as compared with $125.15 in Manitoba, i.e., the province of Manitoba is paid by the railways over 57 per cent more in taxes per mile of line than the average for the whole of Canada. With 11.513 per cent of the railway mileage of Canada, the railways in Manitoba paid 18.092 per cent of the provincial railway taxes of Canada.

EMPLOYMENT PROVIDED BY RAILWAYS

The railways in Canada have been very important from the standpoint of giving employment. We have already referred to the fact that the construction of railways in the first instance provided large scale employment, and in the main were constructed in the period before power machinery was in general use. In the construction process, the railways offered employment to people of all degrees of skill, ranging from the technically qualified engineer to the manual workers in the construction camps.

When the end of railway construction was reached in Canada, and especially in western Canada, the railways no longer required the same volume of labour, but in the operation and maintenance of railroads alone there still remains a vast amount of employment. Railways are naturally large scale organizations and in the operation and maintenance of railways labour is necessary at all times and at all points.

The question naturally arises as to the degree of employment which railways provide in the province of Manitoba. According to the Census of Industry in 1931, out of a total of 124,426 males employed by steam railways, a total of 13,281 were employed in Manitoba; 11,125 in Saskatchewan, and 10,395 in Alberta. In other words, with 45 per cent of the railway mileage of Canada in the prairie provinces, the railways had 28 per cent of their employees in the prairie provinces.

While employment on the railways in Canada does not follow the distribution of railway mileage within various provinces, there is a significant share of the total railway employment in Canada located in the prairie provinces and in Manitoba. Manitoba alone, in 1931, had about 11 per cent of the total number of railway employees in Canada, a slightly higher percentage than Saskatchewan or Alberta. In addition, it is interesting to note that Manitoba had 11 per cent of the total employment in Canadian railways, while at the same time the total population of Manitoba amounted to only 6.75 per cent of the population of Canada. The fact that Manitoba contains a number of important railway centres, especially greater Winnipeg, in addition to widespread railway mileage, accounts for this fact.

The amount of wages and salaries paid by railways in Manitoba may be roughly estimated by the fact that in 1936 total wages and salaries paid by railways in Canada amounted to $182,638,000, of which the Manitoba share would be approximately $20,000,000.

In order to function efficiently and in order to provide maximum employment, railways require volume of traffic. The effects, therefore, upon the extent of employment given by railways, of the major crop disasters which have been sustained in western Canada in recent years, are very marked. A return to normal wheat production in western Canada will mean a great deal in respect to successful railway operation in Canada and especially in the direction of permitting the railroads to give the degree of employment which they would like to give and which they are equipped to give providing volume of tonnage is available.

WAGES AND MATERIAL

It may be of interest to refer to the contribution made by the railways of Canada (separate figures for the province of Manitoba being impossible to obtain) to the economic life of the country.

During the year 1936 there were 132,781 persons employed by the industry and the payment of salaries and wages by the railways to these employees totalled $182,638,364.69. It is not necessary to enlarge upon the meaning of the distribution of this huge payroll to the economic and social life of practically every community in the country.

In addition to the salaries and wages paid, the railways purchased materials for use in connection with their operations to the extent of $26,998,734.23. Naturally, track material constituted the larger proportion of materials used, but in order to show how widely the consumption of materials used by the railways extended through the industrial life of the country, the following table is given:-

MATERIALS USED BY STEAM RAILWAYS,
1 9 3 6

	Unit	Quantity	Cost
Timber		-	$ 415,205.02
Lumber, rough		-	541,997.62
Lumber, dressed		-	230,694.62
Piling		-	155,592.24
Poles, telegraph and telephone	Numb.	8,310	28,650.21
Posts	"	562,355	79,988.09
Lath		-	1,077.94
Shingles		-	11,747.23
Railroad ties	"	11,699,876	9,068,633.45
Sash, doors & blinds		-	27,281.84
Structural iron and shapes	Tons	1,097	93,234.23
Steel rails	"	220,778	7,725,476.19
Frogs & Switches		-	879,063.52
Interlocking and other signal apparatus		-	351,551.27

Materials used by steam railways, cont'd (2)

	Unit	Quantity	Cost
Track fasteners and other materials	Tons	47,124	$ 2,896,389.86
Bolts, nuts, rivets, spikes and nails	"	7,791	575,204.67
Other builders' hardware		-	232,735.98
Wire, telegraph and telephone	"	279	90,072.82
Wire, fence		-	100,814.56
Wire, all other	"	352	44,293.05
Galvanized iron and other roofing materials		-	85,779.43
Tin and zinc		-	599.23
Metal lath, shingles, etc.		-	16,763.69
Stone, rough		-	132,998.95
Stone, dressed		-	-
Stone, crushed	cub.yds	485,398	428,385.82
Brick	M.	346	8,366.37
Cement	barr.	41,213	96,057.98
Cement blocks	Numb.	98	723.42
Lime	bush.	8,264	7,942.77
Sand & gravel	cub.yds	2,782,385	422,826.34
Paints, oils, varnishes		-	175,254.10
Glass		-	16,562.61
Putty, etc.	pounds	32,025	1,349.46
All other materials		-	1,762,662.95
Shop machinery		-	292,756.70
Total cost -	-	-	$ 26,998,734.23

Dominion Bureau of Statistics.

REASON FOR LARGE TERMINAL FACILITIES IN GREATER WINNIPEG

Elsewhere in this report there will be found tables and charts giving the tonnages of various commodities loaded and unloaded at stations in the province. This information is taken from Dominion Government Statistical reports which show this particular data segregated by provinces.

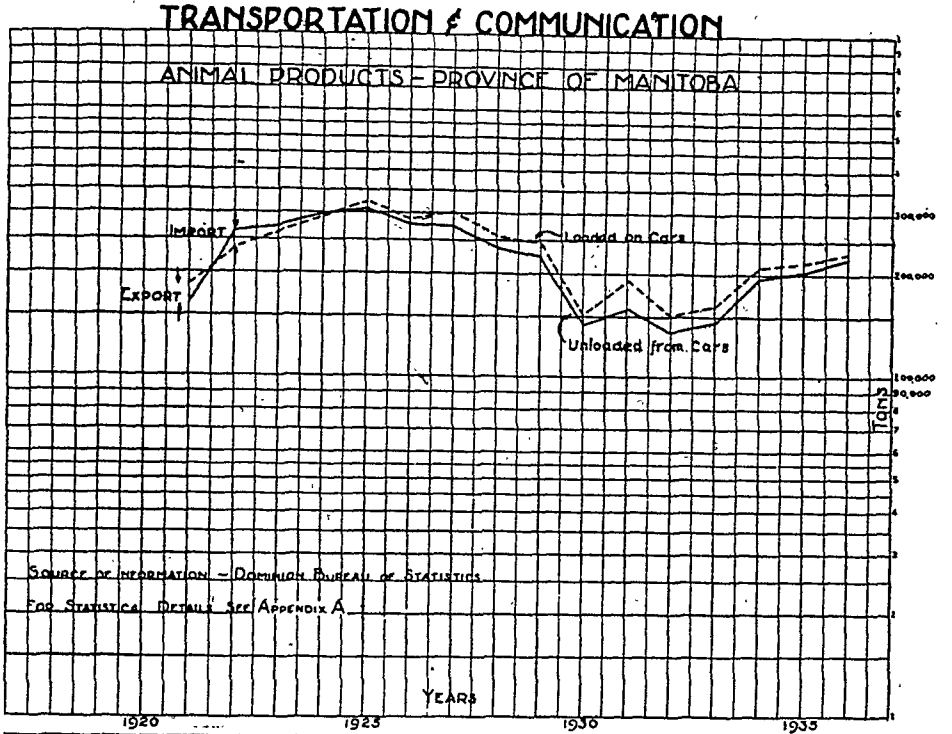
While the essential transportation service connected with the shipping of commodities produced and the delivery of commodities consumed in the province is readily appreciated by the average citizen, a feature which is not so commonly realized is the enormous amount of what may be termed "bridge" traffic handled by the railways of the province. By this is meant the movement of commodities, such as Saskatchewan grain, British Columbia timber, etc., which are produced west of the province, to points east of the province, also goods from eastern points to points west of the province.

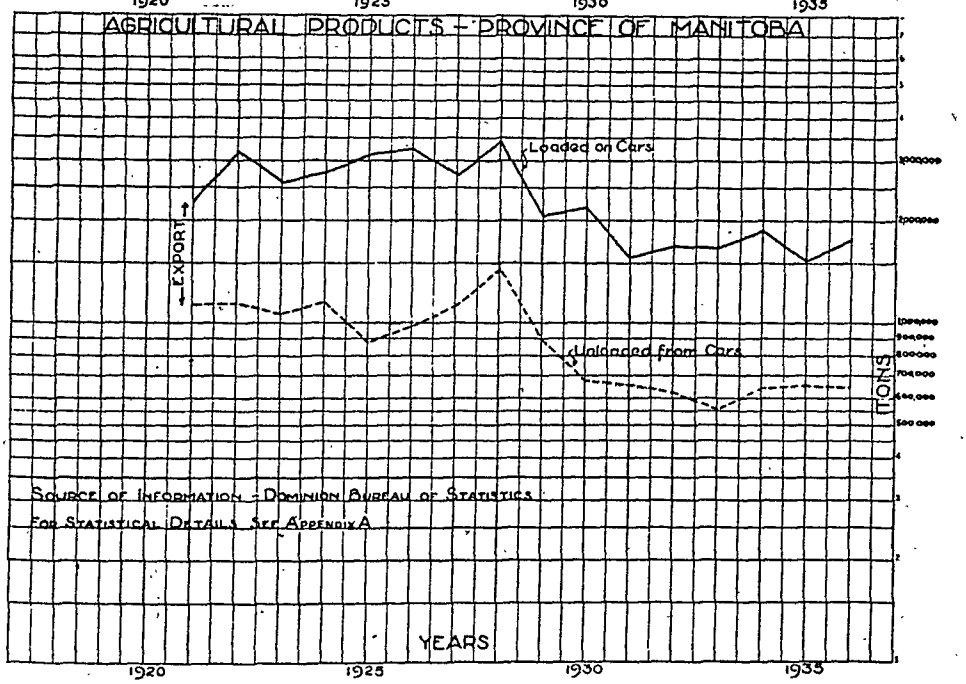
Figures are not readily available as to the amount of such traffic, but the point so far as Manitoba is concerned is that much more elaborate terminal facilities, shops, yards, etc., have been made necessary at Winnipeg, (the neck of the bottle) than the traffic of Manitoba alone would require.

EQUIPMENT

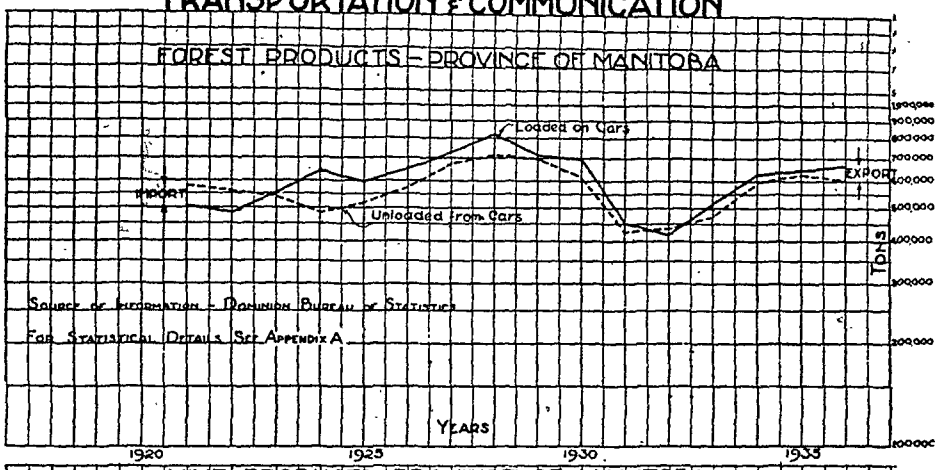
There are 42,916 miles of single track operated by the railways of Canada of which 4,970 are in the province of Manitoba, or, in other words, of every 100 miles of track operated in Canada, 11.6

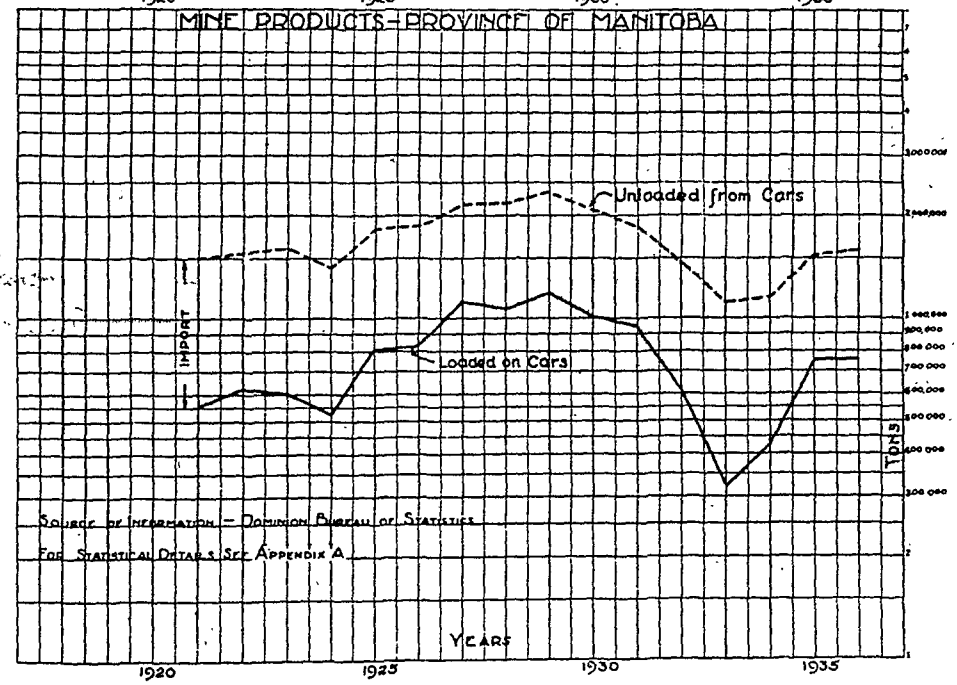
TRANSPORTATION & COMMUNICATION





TRANSPORTATION & COMMUNICATION





miles are in Manitoba. Owing to the fact that the transportation services performed by the railways are inter-provincial as well as intra-provincial, it is not possible to determine just how much rolling stock is provided for use within the geographical boundaries of any province. Figures for the whole of Canada, however, are available as follows:

FREIGHT CARS IN SERVICE

	1929	1930	1931	1932	1933	1934	1935	1936
Box	151,565	151,500	152,841	150,979	146,207	141,768	128,816	124,448
Flat	19,601	17,728	17,256	16,370	15,837	15,124	13,501	12,991
Stock	10,408	9,479	9,281	9,048	8,522	8,744	7,467	7,219
Coal	22,676	22,251	23,091	22,722	22,472	18,115	17,566	17,463
Tank	495	516	512	480	476	468	425	432
Refrigerator	7,579	8,151	8,464	8,341	8,160	7,904	6,682	7,331
Other	5,432	5,402	3,310	3,056	2,988	2,929	2,303	2,124
Total	217,756	215,027	214,765	210,996	204,662	195,052	176,760	172,008
Average Capacity of Cars in tons	38.2	39.3	39.6	39.7	40.0	40.1	41.0	41.4

PASSENGER CARS IN SERVICE

Motor Pass. cars	68	73	104	105	97	96	99	92
First Class	1,999	1,980	1,975	1,953	1,924	1,907	1,745	1,754
2nd Class	386	372	364	355	355	350	295	276
Combination	512	492	490	469	463	461	362	372
Colonist	730	703	644	643	634	628	566	419
Dining	218	218	264	264	261	260	257	256
Parlour	313	331	310	306	303	302	290	278
Sleeping	1,172	1,224	1,235	1,198	1,175	1,163	1,138	1,085
Baggage, Express, & Postal	1,653	1,699	1,695	1,660	1,635	1,629	1,462	1,454
Other	199	254	530	526	507	490	455	457
Total	7,250	7,346	7,611	7,459	7,354	7,286	6,669	6,443

CARS IN COMPANY'S SERVICE

	1929	1930	1931	1932	1933	1934	1935	1936
Caboose	3,333	3,308	3,270	3,250	3,196	3,161	2,854	2,829
All Other	15,415	15,152	15,318	14,887	14,932	17,614	12,475	12,615
Total	18,748	18,460	18,588	18,137	18,128	20,775	15,329	15,444
Total cars in service :-	243,754	240,833	240,964	236,592	230,144	223,113	198,758	193,695

LOCOMOTIVES IN SERVICE

Passenger	1,466	1,438	1,392	1,353	1,333	1,291	1,200	1,191
Freight	3,233	3,192	3,165	3,123	3,073	3,035	2,876	2,862
Switching	796	784	780	751	742	727	685	660
Electric	36	37	40	39	39	34	34	34
Total	5,531	5,451	5,377	5,266	5,187	5,087	4,795	4,747
Tractive Power Av. lbs. per Locomotive	36,201	36,863	37,130	37,132	37,242	37,543	38,140	38,432

The above figures indicate the equipment provided by the railways of Canada for the services which they perform. While the number of passenger cars has decreased 807 or 11.1 per cent since 1929, freight cars have decreased 45,748 or 21 per cent, but the average capacity per freight car has increased from 36.2 tons to 41.4 tons, an increase of 3.2 tons or 8.41 per cent, and the average tractive power per locomotive has increased 6.2 per cent. The features of increased car capacity, and increased locomotive capacity combine to enable a given load to be moved in fewer cars with fewer locomotives than in 1929.

GRAIN SERVICE

As the handling of western Canada's grain crop is probably the major problem to be solved by the railways of the west, the provision of the necessary equipment is a feature of the utmost importance. The following table shows the number of cars of grain delivered at Port Arthur and Fort William for the years 1926-1935 inclusive, and also the number of cars delivered in those years during the period August 1 to November 30, inclusive.

- CARS DELIVERED -

Year	Whole Year	Aug.1 - Nov. 30	per cent of whole
1926	234,554	135,557	57.78
1927	240,046	118,825	49,50
1928	295,825	177,141	59,86
1929	120,006	68,992	57,49
1930	164,335	93,019	56,60
1931	121,304	64,861	53,47
1932	145,724	81,993	56,27
1933	110,355	60,411	54,74
1934	110,033	62,421	56,75
1935	110,465	68,539	62.05
10 year Average	165,268	93,176	56.38

Thus 56.38 per cent of the whole amount of grain delivered to the Lakehead in the entire year (10 year average) was delivered in four months. Had it been possible to distribute this delivery uniformly throughout the twelve months then, instead of 93,176 car loads having been delivered in the four months August 1 to November 30, only 55,069 carloads would have been delivered - 38,087 carloads less. As the average car cycle or elapsed time

per round trip of a graincar from Manitoba to the Lakehead is approximately 12 days, 3,609 less actual cars would have been required.

The cost price of a 40 ton car for grain service is $3500 to $4,000, so that the provision of 3,609 extra cars by the railways meant an actual capital expenditure of between $13,331,500 and $15,236,000.

At an average of 60 car loads per train, the year's deliveries meant 2,755 trains of which 1,553 were handled August 1 to November 30, but had the delivery been distributed throughout the year only 918 trains would have been required August 1 to November 30 -- 635 trains less, or an average of 159 trains less per month. Assuming a locomotive to make three round trips per month, 53 less locomotives would have been required. The provision of these additional power units meant an expenditure of approximately $5,300,000 so that the annual fall "grain rush" may be said to cost the railways in cars and locomotives alone, the sum of $20,000,000 and for most of the remaining eight months of the year a great part of this equipment is surplus - lying idle.

These are only two of the many costly and objectionable features forced upon the railways by the necessity of having to handle 56.36 per cent of the grain of western Canada in one third of the year.

REGULATION OF RAILWAYS IN CANADA

In a free and unregulated competitive industry there would be no cause for public concern in conflicting desires on the part of owners, managements, employees, customers or governments. If managements raised prices too high they would simply lose business to their competitors, and if, as a consequence they were forced to suspend operations the public would not suffer since competitors would give all the service that had been given by the suspended business. This is true only when any one of the units of the industry can provide ALL the service that industry requires.

But there is no competitive substitute for a large part of the service provided by the railways. For instance, British Columbia timber, Alberta coal and wheat from the prairies cannot be moved from producer to consumer without the service that railways alone can provide. When a railway is forced to suspend operations there are always heavy losses among its customers because rival agencies of transportation can not provide the complete services which the railway affords.

In the beginning of the railway transportation industry on this continent it was largely an unregulated competitive industry with the result that preferences and discriminations of all kinds with respect to service and rates were practiced to the utmost. This state of affairs, however, soon forced the railways into a policy of regulation, standardization of rates, etc., as much for their own preservation as for the welfare of the communities they served, until today the railway industry is regulated and controlled by proper Federal authority in practically every function it performs.

The Federal authority under whose jurisdiction railways in Canada operate is the Board of Railway Commissioners. This Board has the power of adopting and applying the provisions of the Railway Act, power to issue mandatory or restraining orders and regulations and has all the powers of a superior court in the enforcement of its orders.

To attempt to set out in detail the various regulatory powers of the Board in respect to railways would require a volume in itself but the following condensed statement will indicate to some degree the regulations under which railways operate.

Location and Construction

Location to be approved by Board
Wages - Fair wages to be paid
Respecting navigable waters
Bridges, tunnels and other structures
Crossings and junctions with other railways
Highway crossings
Drainage and power, mining and irrigation works
Farm crossings
Fences, gates and cattle guards

Opening of Railway for Traffic

Leave of Board to be obtained

Safety and Care of Roadway

Animals at large near highway crossings
Thistles and weeds to be kept cut
Dry grass to be removed
Fire protection, fireguards, patrols, reports
Board may direct inspection and order repairs
Board may forbid operation

Accidents

Notice to be sent to Board
Board may direct inquiry
Board may order suspension or dismissal of negligent employees

Operation and Equipment

Speed of trains
Use of steam whistle
Method and means of passing from one car to another
Coupling of cars
Shelter for employees on duty
Use of nettings, screens, grates and other devices on locomotives for prevention of fires.
Rolling stock, apparatus, cattle-guards, appliances, signals, methods, devices, structures and works, including light, heat and power lines or wires.
Length of sections required to be kept in repair by employees.
Number of employees required for each section.
Number of men to be employed upon trains.
Limiting or regulating hours of duty of employees
Specify kind of fuel, power or means of propulsion to be used by locomotives and trains in any district.
Providing for protection of property and for the protection, safety, accomodation and comfort of the public and the employees.
Time tables
Loading and unloading of cars
Weights cars are to carry
Receipt and delivery of traffic
Nuisances
Modern and efficient apparatus and appliances
Brakes
Ladders and hand grips on freight cars
Height of draw bars
Determine what equipment is sufficient
Regularity in train time
No freight, merchandise or lumber car in rear of a passenger car in which any passenger is carried.
Precautions at swing bridges
Precautions at railway crossings
Precautions at Highway crossing and in thickly populated places
Statistical reports - yearly and monthly.
Adequate and suitable accommodation for receiving and loading of all traffic offered for carriage upon the railway
Board may order accomodation to be furnished by railway
Board may prohibit or limit the use of any engines, locomotives, cars, rolling stock, apparatus, machinery or devices or any class or kind thereof
Board may order that specific works be constructed or carried out or that property be acquired, or that specific tolls be charged, or that cars, motive power or other equipment be allotted, distributed, used or moved as specified by the Board or that any specified steps, systems or methods be taken or followed by any particular company or companies or by railways generally.

Board may issue regulations regarding interchange of traffic between connecting lines and interswitching and direct the price per car which shall be charged by and paid for such traffic

No company may abandon the operation of any line of railway without permission of the Board.

Traffic Tolls and Tariffs

Tolls under substantially equal circumstances and conditions shall always be equal
No discrimination in tolls permitted as between persons, companies or localities
No undue preference, discrimination, prejudice or disadvantage permitted by any railway company in any respect
Tariff of tolls subject to classification by Board
All tariffs to be submitted to and approved by Board
No tolls may be charged unless authorized
Board makes regulations fixing and determining the time when, the places where, and the manner in which tariffs shall be filed, published and kept open for public inspection.
Board may disallow, substitute, amend or consolidate tariff by-laws and tariffs of tolls.
Power of Board to fix, determine, enforce, change and alter rates, is not limited
Board has similar full powers respecting express and telegraph services.

As an indication of the thorough and detailed manner in which the railways are regulated the following data show the Orders of the Board of Railway Commissioners in respect to the operation of locomotives. Incidentally the carrying out of these regulations involves heavy expense on the part of the railways - expenses which the railways are only too glad to incur in the interests of efficiency and public safety.

REGULATIONS INVOLVING EXPENSE IN CONNECTION WITH OPERATION OF LOCOMOTIVES

LOCOMOTIVES

ITEM	AUTHORITY	WORK INVOLVED TO COMPLY WITH THE REGULATION
Boilers (interior)	Board of Rly. Commissioners Gen.Order #473	All flues shall be removed at least once every 4 years for examination of the entire interior of the boiler and its bracing, boiler must have the scale removed and be thoroughly cleaned and inspected.
Boilers (Exterior)	"	The jacket and lagging shall be removed after 60 calendar months' service, inspection made of entire exterior of the boiler while under hydrostatic pressure.
Boiler Testing	"	Every boiler at least after every twelve calendar months' service shall be subjected to hydrostatic pressure 25% above the working steam pressure.
Boiler Staybolts (Rigid Bolts)	"	All staybolts shall be tested at least once each month and after every hydrostatic test.
Boiler Staybolts (Flexible)	"	All staybolts having caps over outer ends shall have the caps removed upon the completion of 24 calendar months actual service, and bolts and sleeves examined for breakage, This involves removal of jacket and lagging.
Boiler Mountings	"	Steam gauges shall be tested at least once every 3 months, safety valves shall be tested under steam at least once every 3 months. Spindles of all gauge cocks and water glass cocks shall be removed and cocks thoroughly cleaned of scale and sediment at least once each month.

Regulations Involving Expense in Connection with Operation of Locomotives - cont'd. (2)

LOCOMOTIVES

ITEM	AUTHORITY	WORK INVOLVED TO COMPLY WITH THE REGULATION.
Boiler Washing	Board of Rly. Commissioners Gen.Order #473	All boilers must be thoroughly washed as often as the water conditions require, but not less than once a month, when boilers are washed, all washout, arch and water bar plugs must be removed, the passageway into the boiler of all water glass mountings and try cocks must be thoroughly cleaned out each time boiler is washed.
Loco.Tenders	B.R.C. Order #385	Not less than once each month the interior of the tank shall be inspected and cleaned if necessary; screens for tank valves must be removed and connections to the tank valves examined, screens cleaned and replaced.
Tender Wheels	B.R.C. Order #516.	Wheels to be removed from service for following defects:- Slid Flat Spot 2½" or longer. Flange worn 15/16" or less in thickness. Tread worn 5/16", flange more than 1½" from tread to top of flange. Brake burn crack or spots due to heating.
Driving & Trailing Wheel Centres.	B.R.C. Order #516	With one or more spokes in wheel broken must be removed from service.
Driving & Trailing Wheel Tires.	"	Wheels to be removed from engine for tires to be turned or renewed if worn in excess of:- Tread worn hollow 5/16" Road Service " " " 3/8" Switch. Service Flange 15/16" or less in thickness, or having flat vertical surface 1" or more from tread, Flange more than 1½" from tread to top of flange. Slid flat spot 2½" or more in length.

Regulations Involving Expense in Connection with Operation of Locomotives - cont'd - (3)

LOCOMOTIVE

ITEM	AUTHORITY	WORK INVOLVED TO COMPLY WITH THE REGULATION
Draw gear between engine & tender	B.R.C. Order #415	The pins and drawbars shall be removed and examined once every three months.
Fire Protective Appliances	B.R.C. Order #362	Smokebox netting, dead plates, ash pans, dampers, slides and doors, and any other fire protective appliances to be examined at least once a week.
Locomotive Brake Equipment	B.R.C. Order #289	Distributing, reducing & triple valves, also straight air double check valves and dirt collectors to be cleaned not less frequently than once every six months. Main reservoir to be tested at least each twelve months, and subjected to hydro-static pressure not less than 25% above maximum allowed air pressure. The entire surface of reservoir shall be hammer-tested not less than once each eighteen months.

Safety in Operation - In addition to the regulations of the Board of Railway Commissioners the railways have themselves voluntarily inaugurated rules for the purpose of providing the maximum of safety and economy in their operations. The Association of American Railroads, whose membership includes practically every railway on the continent, has issued books of rules on various matters. For instance, "Rules governing the loading of commodities on open top cars" is a book of 290 pages and in the preface are these words, "These rules have been formulated for the purpose of providing uniform, safe and economical methods of loading in open top cars. In the loading of such cars the hazards connected with high speed, multiple track railroads, tunnels, electrical conductors, and the necessity of protecting human life and property should be borne in mind. While these rules are based on many years of exacting studies and

experiments, the railroads stand ready at all times to co-operate with the shippers for betterments."

Rules "Governing the loading of lumber, structural material, machinery, culvert pipe, automobiles, etc." is a book of 365 pages.

Rules "Governing the condition of, and repairs to, freight and passenger cars for the interchange of traffic" is a book of 314 pages.

In the book of Operating Rules, which are approved by the Board of Railway Commissioners, the first sentence is "Safety is of the first importance in the discharge of duty". An examination on these rules , of which there are 637, must be satisfactorily passed by every employee whose duties are connected with the movement of trains.

Further elaboration is unnecessary to indicate the prominent position which safety in operation occupies in the policies of those who have the operation of railways in their charge.

Safety Record and Safety Policy

During the year 1936 the railways of Canada produced passenger transportation to the equivalent of carrying one passenger a distance of 1,726,058,974 miles, or, in other words, 1,726,058,974 passengers a distance of one mile. During the year there were 6 passengers killed and 657 injured as a result of the movement of trains, which is to say that out of every 287,676,496 passengers who travelled one mile, one was killed, and out of every 2,627,183 passengers who travelled one mile one was injured. This wonderful achievement was the result of the co-ordinated and sustained efforts of thousands of highly trained employees whose constant watchword is "Safety First". The assertion that one is safer in a railway train than in one's own home is no idle statement. While this result may be considered

satisfactory, the railways still are not satisfied . The Association of American Railroads to which reference has already been made, recently announced the establishment of a Division of Engineering Research whose function will be to expand and co-ordinate research work now being carried on by the railways individually. The Division of Engineering research will have jurisdiction over all research relating to cars, locomotives, track structures, building, electrical, shop and maintenance of way equipment, and the material and supplies used in connection therewith. Not only will it deal with all mechanical facilities but also with metallurgical and physical problems, as well as fuel, water, paints and other material and supplies.

The scope of activities of this Division is sufficiently wide as to bring under one head the closest correlation between all research activities having to do with mechanical, civil and electrical engineering and also dealing with many problems which are closely related to each of these branches of engineering. It will maintain the closest possible contact with the mechanical, civil, electrical, chemical and other technical offices of the railways and all manufacturers who supply the railways with equipment and materials.

The establishment of this Division is but a further indication of the efforts the railways are making, and have been making for years, for the single purpose of increased safety and economy in transporting the nation's freight and passenger business.

In the past eleven years not a person has been killed or injured in connection with the movement over the railways of the United States and Canada of billions of pounds of dynamite, black powder and other dangerous explosives. In 1937 alone, approximately 450,000,000 pounds of explosives were handled by the railways, an increase of approximately 50,000,000 pounds compared with the preceding year.

Although great quantities of other dangerous articles, such as gasoline, acids and corrosive liquids, inflammable liquids and solids, poisonous articles and compressed gases were shipped over the railways in 1937, no fatal accident in connection with these shipments took place and only ten persons were slightly injured.

RAILWAY SERVICES AND ABANDONMENT

It is universal experience that communities are not concerned over the welfare of the railways until, with their trains starved off their wheels, they are compelled to reduce or probably abandon train service. Then the communities affected are stirred into appreciation of what service given at a loss has meant to them. The public travels and moves its freight in the manner that assures the lowest cost. The railways are expected to get along on what is left, and maintain unprofitable services so that occasional passengers or shippers of freight may have the accommodation that at the moment best fits their needs, and the public at large may have prompt mail and express deliveries.

Business must be business with the railways as it is with everyone else in business.

LINE ABANDONMENTS

It may be of interest to refer to a recent specific case of application for leave to abandon a portion of a railway line.

Board of Railway Commissioners order #55671, dated March 3, 1938, reads as follows:-

> "In the matter of the application of the Canadian National Railways, hereinafter called the "Applicants" under Sec.165A of the Railway Act, for approval of the abandonment of operation of a portion of their La Tuque subdivision, between Dombourg (mileage 15.9) and St.Marc (mileage 38.2) in the province of Quebec, a distance of 22.3 miles.
>
> Hon.Hugh Guthrie - Chief Commissioner
> F.N.Garceau, K.C.- Deputy Chief Commissioner.

Upon hearing the application at the sittings of the Board held at Quebec January 11, 1937, in the presence of Counsel for

the Applicants, the Municipal Councils of Portneuf County and of St.Basile, and the Corporation of St.Marc des Carrieres, and what was alleged; and upon reading the further submissions filed -

It is ordered:- That the abandonment of operation of a portion of the applicant's La Tuque subdivision between Domburg and St. Marc, in the province of Quebec, a distance of 22.3 miles, be, and it is hereby, approved.

H.Guthrie,
Chief Commissioner.

The delay between the hearing and the issuing of the Order was the result of conferences between the railway authorities and representatives of districts involved to see if some arrangement could be arrived at in regard to the operation of the railway between the above points. These conferences were unsuccessful.

Some excerpts from the judgment of the Chief Commissioner will be of interest,-

"The railway between the above points seems to have been originally constructed as a first class railway with excellent road-bed and grades and equipped with 80-lb. steel rails. But during recent years the business upon this particular portion of the railway has fallen off and the cost of operation of the 22 miles involved in this application has been entirely out of proportion to the revenue received by the railway company. This decrease in traffic may be attributable to some extent to the depression which has existed during recent years, or, it may have arisen from the fact that the particular locality is fairly well served with highways upon which motor-trucks carry a great deal of traffic

which otherwise would go by rail.....

In 1935 the total receipts were $5,445 and the operating expenses $19,504, including $11,545 for maintenance of way and structures .....

There are fairly good roads and these roads are being utilized continually for the transport of freight by motor-truck. It is complained that on some of these roads there are steep hills and other obstructions which may cause some inconvenience and delay in the hauling of heavy loads .....

Upon considering the whole case I am satisfied that the heavy operating loss suffered by the applicants upon this 22 miles of railway entirely outweighs any loss or inconvenience which will be suffered by the public.

For the above reasons I feel that the application for the abandonment of the above road should be granted."

March 3, 1938.

The Deputy Chief Commissioner concurred and Order #55671 was issued accordingly.

During the hearing strong objections were presented by the Hon. Bona Dussault, a member of the provincial government, by the Mayor, Council of St.Basile and several leading citizens of the district.

CHAPTER IV

HIGHWAY TRANSPORTATION

Highway transportation is a modern development. It is probably too new to be thoroughly understood especially in regard to its relation with other means of transportation. Prior to the invention of the automobile, late in the last century, the cost of transporting goods by horse and wagon was exceedingly high especially when long distances were involved. After the era of railroad construction began, the highway or road became of little importance for long distance transportation. Transportation by road was largely of a local nature. In introducing a discussion of highway transportation, Locklin in "Economics of Transportation", page 718, states:

> "The invention of the automobile late in the 19th century was destined to alter profoundly the transportation systems that had developed up to that time. Motor vehicles created a demand for greatly improved roads, and the improved roads, in turn, greatly increased the possibilities of the new means of transportation. In the space of a few years highways were again to become an important factor in the movement of persons and property over comparatively long distances. Motor trucks were soon to threaten the practical monopoly of inter-city freight transportation that railroads had enjoyed. Motor trucks are forcing many changes in railroad freight rates and services, and we are still in the throes of the readjustment which trucks have made necessary".

GROWTH OF MOTOR VEHICLE TRANSPORTATION

The following table shows motor vehicle registration in the United States, Canada and Manitoba over a period of years:

Year	UNITED STATES Number of Registrations	CANADA Number of Registrations	MANITOBA Number of Registrations
1895	4	-	-
1900	8,000	-	-
1905	78,000	565	-
1910	468,000	9,158	1,715
1915	2,445,666	95,284	9,937
1920	9,231,941	408,790	38,257
1925	19,937,274	724,048	50,884
1930	26,545,281	1,222,489	78,850
1931	25,832,884	1,200,668	75,210
1932	24,115,129	1,113,533	70,840
1933	23,827,290	1,083,178	68,590
1934	24,952,000	1,129,532	70,430
1935	26,231,000	1,176,116	70,660

The development of highway transportation not only is related to the development of the internal combustion engine and the many improvements made therein in the last quarter of a century, but also rests upon the assumption of new responsibilities on the part of governments. This new responsibility which governments assumed in Canada, the United States and other countries involved vast public expenditures for roads. Without the active co-operation of municipal and provincial governments, and to a lesser extent the Dominion government in Canada, the possibility of developing highway traffic to its present stage would have been remote. It was natural that governments should assume responsibility for improved roads. The motor car, and later the motor truck, was widely owned, and in western Canada, especially in the last fifteen years, public demand upon governments for the building of all-weather transportation facilities has been very great. The result of this situation has been that the automotive engineer has furnished the equipment

necessary for highway transportation and governments, both municipal and provincial, have furnished the highways. The combination of the two factors has brought about a revolutionary change in transportation. No longer have the railroads a monopoly upon long distance hauling. The flexibility of the motor truck has enabled it to gain a solid footing in respect to local transportation and short distance hauling.

A decidedly new factor was introduced into the transportation field with the development of motor vehicle transportation on the highway. Hitherto the development of channels of transportation involved the expenditure of large sums of money. The railroads before they were able to operate had to spend millions of dollars in the constructions of road-beds and in the laying of steel. Large investment was a characteristic of transportation up until the time of the automobile and the motor truck. Today, however, the motor truck can enter the field of short distance or long distance transportation with a reasonably small investment. The motor truck only to a very slight degree is a contributor to capital cost of the construction of the roads over which it travels, and to maintenance of highways. The financial responsibility of the motor truck in respect to the highways which it uses, is limited to the extent of motor license fees, the amount of gasoline taxes paid, and the contribution which the owner or operater makes in general taxation as a result of his citizenship in the province. Thus the motor truck has come into widespread use on a basis of investment much

smaller than that which the railways had to make to provide similar services.

THE MAIN FEATURES OF HIGHWAY TRANSPORTATION IN MANITOBA

Before giving further consideration to the relationship between various forms of transportation, we will outline the broad features of highway transportation in the province of Manitoba, and in Canada where necessary.

Highway Mileage

The following table shows highway mileage open for traffic in Canada and Manitoba from 1928 to 1936:-

	Canada	Manitoba
1936	410,448	34,377
1935	410,808	34,732
1934	409,269	34,389
1933	409,124	34,375
1932	398,320	28,410
1931	398,296	28,287
1930	394,372	26,152
1929	390,060	25,646
1928	381,976	25,646

The expansion in highway mileage in Canada and in Manitoba is indicated in this table. It will be noted that expansion was rapid in the years between 1928 and 1933, but has been relatively slow since 1933. It should be pointed out that in western Canada, demand for good roads became very urgent in the '20's and road building continued for several years after the depression became

severe. This construction of road building after the collapse of 1929-30 in western Canada was partially due to a desire on the part of western governments to complete road projects which were under way prior to the arrival of the depression, and also due in part, to the belief that a slowing down of business activity presented a psychological opportunity for the undertaking of public works such as highway construction. By 1933, of course, the position of governments was so seriously affected by conditions then existing, that economy demanded a cessation of road building on the scale it had been carried on in the preceding years.

Highway Debt

The following table shows the highway debt of each province in Canada:

Province	Year Ended	Highway Debt Outstanding	Interest Charges	Principal and Sinking Fund Payments
		$	$	$
Prince Edward Island	Dec.31/34	1,004,774	60,125	25,875
Nova Scotia.....	Nov.30/36	33,980,000	1,348,625	----
New Brunswick.....	Oct.31/36	47,612,809 (1)	1,599,750 (3)	183,037
Quebec.....	June 30/36	70,811,809	2,890,750	1,623,744
Ontario.....	Mar. 31/37	224,639,350	11,231,967	2,398,576
Manitoba.....	Apr. 30/37	17,794,182	884,795	----
Saskatchewan.....	Mar.31 /37	33,799,488	1,600,936	----
Alberta.....	Mar.31 /37	37,025,514	1,150,514	----
British Columbia....	Mar.31 /37	41,297,772 (2)	1,762,080 (3)	1,616,468
Totals.....		507,992,172	22,529,132	5,847,700

(1) Includes $11,005,359 bridge debentures.
Correction for 1935: Highways-$31,487,450; Bridge-$10,605,359
Total -$42,092,809.

(2) Includes $1,515,000 for New Westminster bridge and half of $3,000,000 for Fraser river bridge which is a railway and vehicular bridge

(3) Interest on highway debt only.

It will be noted from the foregoing table, as calculated by The Dominion Bureau of Statistics, that outstanding highway debt in Canada amounted to over $500,000,000 at the end of the fiscal years shown. Annual interest charges on this debt amounted to over $22,000,000, and principal and sinking fund payments to nearly $6,000,000. This table shows the tremendous investments which provinces have made in the construction of roads which today support the vast automobile and trucking traffic which operates throughout Canada. This investment was made in the first instance by the general public, but with the increasing of motor license fees and gasoline taxes, an increasing share of the cost of maintenance, and to a certain extent, the provision for debt retirement has been placed upon those who used the highways either for passenger or truck service. In this connection it is probably true that the passenger car, being the vehicle in greatest number on the highway, contibutes the major share to the maintenance of highways.

REGISTRATION OF MOTOR VEHICLES

On the following page is shown the registration of motor vehicles in the province of Manitoba in 1936. It will be noted from this table a total of 61,380 passenger cars were registered in 1936, and a total of 12,380 motor trucks were also registered.

REGISTRATIONS OF MOTOR VEHICLES, DRIVERS, ETC., 1936

MANITOBA

Passenger automobiles -	New	3,900
	Renewals	57,480
	Total	61,380
Taxi cabs		350
Total passenger cars		(2) 61,730
Motor trucks -	New	700
	Renewals	11,680
	Total	(3) 12,380
Motor trucks - convertible		-
Total trucks		12,380
Motor buses		170
Motor cycles		660
Road tractors		(4)
Ambulances and hearses		(1)
Municipal fire trucks		(4)
Road machines, flushers, etc.		(4)
Cranes, service cars, etc.		(4)
Total Motor Vehicles		74,940
Trailers		4,240
Chauffeurs' licenses		9,890
Drivers' "		88,600
Dealers' "		310
Gasolene station licenses		Not reg'd.
Garage licenses		Not reg'd.

(1) Included with passenger cars.
(2) Includes 34 non-resident cars.
(3) Including 9 non-resident trucks.
(4) Included with trucks.

PUBLIC SERVICE VEHICLES

Taxi cabs	264
Buses	101
Trucks	551
Trailers	46

REGISTRATION BY MUNICIPALITIES

The table following shows the registration of motor equipment in the province of Manitoba by municipalities for the year 1936.

Manitoba	Passenger Cars 1/ No.	Motor Trucks No.
Cities		
Brandon	1,632	273
Portage la Prairie	605	92
St. Boniface	1,259	304
Winnipeg	18,808	2,907
Winnipeg Suburban -		
Brooklands	130	20
Fort Garry	403	102
Kildonan-East	726	60
Kildonan-West	486	58
St. James	1,229	114
St. Vital	998	161
Transcona	319	36
Tuxedo	236	30
Towns		
Beausejour	127	57
Birtle	89	11
Boissevain	96	37
Carberry	88	23
Carman	169	55
Dauphin	503	104
Deloraine	107	21
Emerson	109	14
Gladstone	55	12
Grandview	66	21
Hartney	66	17
Killarney	127	23
Melita	65	18
Minnedosa	204	29
Morden	159	51
Morris	105	73
Neepawa	242	55
Oak Lake	50	13
Rapid City	46	12
Rivers	71	9
Russell	76	16
Selkirk	277	57
Souris	113	47
Stonewall	105	13
Swan River	124	34
The Pas	104	50
Virden	181	40
Winnipeg Beach	73	52
Flin Flon, Mun. Dist.	57	15

1/ Includes convertibles.

Registrations by Municipalities (Cont'd)

	Passenger Cars No.	Motor Trucks No.
Villages		
Binscarth	33	4
Elkhorn	48	10
Foxwarren	25	3
Garson	19	7
Gilbert Plains	106	19
Gimli	65	35
Great Falls	8	-
Gretna	40	17
Hamiota	73	16
Manitou	77	25
Napinka	25	4
Pilot Mound	55	12
Plum Coulee	38	15
Roblin	37	16
Rossburn	35	9
Shoal Lake	63	19
Ste. Rose du Lac	18	9
Teulon	69	17
Wawanesa	42	17
Winkler	98	29
Winnipegosis	52	12
Rural Municipalities		
Albert	143	26
Archie	130	14
Argyle	342	49
Armstrong	71	30
Arthur	188	36
Assiniboia	192	51
Bifrost	273	58
Birtle	249	17
Blanchard	276	28
Boulton	73	7
Brenda	253	41
Brokenhead	246	100
Cameron	224	46
Cartier	207	85
Charleswood	190	68
Clanwilliam	183	44
Coldwell	189	33
Cornwallis	135	36
Cypress-North	375	46
Cypress-South	229	32
Daly	195	26
Dauphin	396	76
De Salaberry	263	120
Dufferin	468	90

Registrations by Municipalities (Cont'd)

	Passenger Cars No.	Motor Trucks No.
Rural Municipalities (Cont'd)		
Edward	160	13
Ellice	104	33
Elton	293	44
Eriksdale	123	26
Ethelbert	105	11
Franklin	445	66
Gilbert Plains	257	37
Gimli	121	38
Glenella	95	17
Glenwood	261	27
Grandview	247	29
Grey	439	124
Hamiota	365	32
Hanover	439	134
Harrison	216	45
Hillsburg	69	12
Kildonan-North	165	79
Kildonan-Old	68	51
La Broquerie	67	34
Lac du Bonnet	242	70
Lakeview	124	31
Langford	205	16
Lansdowne	186	25
Lawrence	80	25
Lorne	557	76
Louise	437	50
MacDonald	562	174
McCreary	143	38
Miniota	348	46
Minitonas	212	38
Minto	247	18
Montcalm	279	69
Morris	522	228
Morton	312	45
Mossey River	83	18
Norfolk-North	474	88
Norfolk-South	384	52
Oakland	234	47
Ochre River	123	33
Odanah	182	13
Pembina	530	18
Piney	99	49
Pipestone	367	69
Portage la Prairie	919	246
Rhineland	706	133
Ritchot	205	101
Riverside	238	33
Roblin	307	36

Registrations by Municipalities (Cont'd)

	Passenger Cars No.	Motor Trucks No.
Rural Municipalities (Cont'd)		
Rockwood	568	139
Roland	332	50
Rosedale	359	78
Rossburn	85	14
Rosser	245	109
Russell	159	21
Saskatchewan	252	35
Shellmouth	155	17
Shell River	205	30
Shoal Lake	197	23
Sifton	185	53
Siglunes	96	26
Silver Creek	178	24
Springfield	494	229
Stanley	482	121
Strathclair	244	39
Strathcona	274	40
Swan River	578	109
St. Andrews	418	189
Ste. Anne	218	70
St. Clements	307	254
St. Francois Xavier	79	30
St. Laurent	96	18
St. Paul East	141	84
St. Paul West	65	48
Ste. Rose	105	15
Tache	252	76
Thompson	323	55
Turtle Mountain	412	48
Victoria	226	37
Victoria Beach	6	5
Wallace	372	26
Westbourne	342	56
Whitehead	253	32
Whitemouth	190	51
Whitewater	293	48
Winchester	198	30
Woodlands	307	63
Woodlea	51	11
Woodworth	316	45
Unorganized	1,464	536
Other Provinces	34	9
Total	61,903	12,383

REVENUE FROM MOTOR VEHICLES 1936

The following table shows the provincial revenues from motor vehicle registrations, licenses of all classes, and the gasoline tax.

	Manitoba Dec. 31
	$
Passenger automobiles	624,000
Motor trucks	154,600
Motor cycles	2,700
Trailers	7,200
Chauffeurs' licenses	19,600
Drivers' licenses	82,200
Beginners' licenses	600
In-transit licenses	100
Duplicate licenses, badges, etc.	100
Transfer of motor vehicles	24,000
Miscellaneous	14,400
Total	929,500
Public Service Vehicles	
Buses and taxis	43,330
Total	43,330
GRAND TOTAL	972,830
Gasoline Tax	2,051,200
TOTAL ALL REVENUES	3,024,030

It will be noted that the provincial revenue from licenses of all classes in respect to motor vehicles, amounted to $972,830 in Manitoba in 1936. The gasoline tax in that year yielded $2,051,200, making a total revenue from motor vehicles of $3,024,030.

THE BASIS OF LICENSES FOR COMMERCIAL VEHICLES

In Manitoba, public buses are charged a minimum fee of $50.00 plus $2.00 for each seat in excess of 12 when operating on regular runs. Chartered buses are charged 1/10 cent per passenger mile for each trip if not certificated. Trucks with carrying capacities up to 1-1/2 tons transporting milk and cream are charged $25.00 per year. Other trucks are charged $50.00 per year. All trucks with capacities over two tons are charged $25.00 per ton or fraction in excess of two tons. Public service vehicles transporting fish or other seasonal commodities for a period of less than six months are required to pay a license of $10.00 only.

BASIS OF GASOLINE TAX

The following table shows the basis of the gasoline tax in Manitoba since 1923:

Province	Date Effective	Tax per Gallon Cents	Amount per Gallon Cents	Refund Exemptions Uses
Manitoba	April 27/23	1	-	
	March 5/25	3	2	Tractors, etc. in threshing, ploughing, grinding grain, lumbering, commercial fishing boats and any mining or manufacturing purpose other than in the operation of motor vehicles.
	March 31/26		2	All gasoline not used in operation of motor vehicles.
	April 14/30	5	5	All gasoline not used in operation of motor vehicles. Claim for refund must be made within 6 months.
	May 7 /32	7	5	Same as above.
	April 28/33		5	Fishing vessels to limit of 15 gallons per day operated; threshing machines and combines; municipal fire apparatus.

Basis of Licenses for passenger cars

Manitoba licenses for passenger cars are based upon the length of wheel base. The Highway Traffic Act as it stands in 1938 lays down the following basis for the licenses of passenger cars:

PARTIAL SCHEDULE OF LICENSE FEES
FOR PASSENGER CARS

1. For the registration of a motor vehicle

(a) owned and used by the Dominion government, Manitoba government or any municipality within the province -	$1.00
(b) owned and used by Consuls and Consular agents of a foreign country -	1.00

2. For the registration of any other motor vehicle other than a truck, trailer or motorcycle, according to the length of wheelbase, as follows:

(a) not exceeding 100 inches -	9.00
(b) for each additional 5 inches or portion thereof, an additional -	2.50
(c) exceeding 100 inches, but manufactured seven years previous to the first of January of the current year -	9.00

6. For the registration of any of the foregoing, except those referred to in paragraph (1), on, from and after the first day of May, 1934, and thereafter from and after the first day of April in any year, five-sixths of the above fees; on, from and after the first day of August, one-half the above fees. Where the first day of April or the first day of August falls on a holiday, such first days respectively shall be read as the first day immediately preceding such day as is not a holiday. (1934, C.16, S.15; 1938, C.21, S.48)

Drivers' and Chauffeurs' Licenses

Every driver of a passenger car must hold a driver's license for which an annual fee of $1.00 is charged. Chauffeurs must be licensed and the fee in this case is $2.00 per year.

The revenue from motor vehicle operation should also include reference to the numbers of cars coming into the province from outside. Since little information is available in respect to the number of cars from other provinces which come into Manitoba in the course of a year, and in respect to the duration of stay of such cars in Manitoba, the importance of tourist automobiles may be indicated by reference to those entering Manitoba from customs ports in the province. These statistics are shown in the following table:-

		Admitted for period			Canadian cars exported for touring purposes
At ports in	Year	Not exceeding 24 hours	Not exceeding 60 days	Exceeding 60 days and not more than six months	
Manitoba	1936	30,835	15,168	18	16,879
	1935	27,518	13,273	14	21,464
	1934	24,136	10,656	23	16,403
	1933	22,241	9,455	4	13,387
	1932	31,999	11,593	12	9,762

It will be noted that in 1936, 30,835 cars entered Manitoba from the United States for a stay of not exceeding 24 hours, and 15,168 cars for a stay not exceeding 60 days, and 18 cars for a stay exceeding 60 days and not more than six months. 16,879 Canadian cars cleared from customs ports for touring purposes.

SAFETY OF HIGHWAY TRAVEL

The table on the following pages give the detail of motor vehicle accidents in 1936 in Canada and each of the provinces. The heavy accident rate in respect to motor vehicle transportation is noted throughout Canada.

MOTOR VEHICLE ACCIDENTS, 1936

	Canada	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan ϕ	Alberta	British Columbia
NUMBER OF ACCIDENTS										
Fatal (Resulting in death of one or more persons)		6	-	-	-	501	53	35	46	91
Non-fatal (Resulting in injury to one or more persons)		174	-	-	-	7,803	1,312	439	612	1,815
(Resulting in property damage only)		-	-	-	-	3,084	-	410	3,285/	
Total number	29,119	180	2,306	669	4,095	11,388	1,365	884	3,943	4,289
PERSONS KILLED										
Pedestrians	510	1	25	-	170	244	14	7	17	32
Motor cyclists (drivers and passengers)	23	-	1	-		11	3	-	1	7
Drivers of other motor vehicles	323	-	4	-	139	97	29	12	18	24
Passengers & attendants of other motor vehicles	247	3	21	-		156		19	14	34
Drivers and other occupants of horse-drawn vehicles	22	2	1	-	7	7	2	-	-	3
Pedal cyclists	45	1	2	-		30	5	3	2	2
Others	49	-	-	-	42	1	1	-	5	-
Total	1,257	7	54	X 38	358	546	54	41	57	102

X - Not distributed; / - Incomplete; ϕ - For the period March 1 to Dec. 31, 1936.

Motor Vehicle Accidents, 1936 (Cont'd)

	Canada	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
PERSONS INJURED										
Pedestrians	6,973		-	-	2,226	3,362	605	73	172	535
Motor cyclists (drivers and passengers)	444		-	67	(	212	36	7	18	104
Drivers of other motor vehicles	6,954		-	-	(2,704	1,815	(755	266	(376	(1,038
Passengers & attendants of other motor vehicles	4,258		-	300	(	3,633	(	325	(	(
Drivers and other occupants of horse-drawn vehicles	460		-	-	174	175	47	37	12	15
Pedal cyclists	1,651		-	-	(	1,106	192	24	73	256
Others	1,179		-	-	(582	7	10	3	-	577
Total	23,207		X 1,288	367	5,686	10,310	1,645	735	651	2,525
PROPERTY DAMAGE ($)	1,762,256		-	-	-	1,241,851	-	143,912	-	376,493
Persons killed as reported in Vital Statistics as at time and place of death	1,313	7	58	41	371	563	53	47	72	101

The following table shows the deaths resulting from automobile accidents in the various provinces for a period of years. It will be noted that in 1936 according to preliminary statistics 53 people were killed in automobile accidents in Manitoba. In relation to the number of registered motor vehicles, the death rate in Manitoba from automobile accidents is relatively low, only Saskatchewan having a better record.

Year	Canada	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
					TOTAL NUMBER					
1936	+1,313	7	58	41	371	563	53	47	72	101
1935	1,224	2	57	40	314	571	53	40	45	102
1934	1,115	5	41	52	275	528	41	30	61	82
1933	955	2	47	22	256	416	38	32	64	78
1932	1,120	1	51	49	311	497	42	35	49	85
1931	1,316	5	49	45	355	574	60	50	67	111
1930	1,290	10	54	72	338	517	60	51	77	111
1929	1,300	1	61	47	323	556	68	56	71	117
1928	1,082	2	40	31	279	437	53	74	75	91
1927	865	2	31	25	252	387	32	24	35	77
					AVERAGE PER 10,000 REGISTERED MOTOR VEHICLES					
1936+	10.59	9.17	12.56	12.27	20.43	9.54	7.07	4.60	7.39	9.52
1935	10.42	2.43	12.97	12.81	18.40	10.12	7.50	4.21	4.79	10.47
1934	9.82	6.94	9.78	17.87	16.62	9.74	5.82	3.28	6.83	8.91
1933	8.82	2.88	11.62	8.20	16.00	8.00	5.53	3.78	7.43	8.81
1932	10.05	1.43	12.39	17.47	18.77	9.35	5.87	3.83	5.64	9.34
1931	10.96	6.46	11.20	13.38	19.77	10.21	7.94	4.61	7.00	11.33
1930	10.40	13.51	12.54	20.67	18.89	9.16	7.57	3.93	7.50	11.22
1929	10.82	1.63	15.30	14.06	19.05	10.12	8.74	4.30	7.12	11.23
1928	10.05	3.68	11.39	11.00	18.79	8.00	7.45	6.08	8.40	10.25
1927	9.15	4.56	10.31	10.19	19.62	8.87	5.01	2.25	4.74	9.92

+ Preliminary Vital Statistics.

CHAPTER V

HIGHWAYS

There are two types of use for which the highways of today are utilized. Before the "motor era" the "King's Highway" provided access to everyman's property - this and the military requirements of the past were the reasons for the building of roads, and so long as roads were reasonably passable for pedestrian and horse-drawn traffic, the needs of the community were met. Under these conditions the whole cost of the roads was properly charged to the general taxpayer.

With the advent of the motor vehicle came the demand for improved highway surfaces that would permit operation at high speed, and with the increase in use and weight of vehicles came further demands for highways designed and constructed to carry the heavier loads. Not only has the substructure to be strengthened on account of the heavier loads but the width of the roadway, including bridges, has had to be increased to afford a reasonable degree of safety to the public on account of the increased width of vehicle bodies. Curves have had to be constructed with greater radius, traffic signs erected and many other expenses incurred because of the special use to which highways are put today as compared with the "community use" of the past. And the "special use" of today is much greater than the general or so-called "community use".

It is evident that the construction cost of roads built to carry the heavy traffic must be greater than that of roads built to carry ordinary light vehicles. As to the amount by which construction costs are increased in order to accommodate the heavier vehicles definite information is not available. Estimates

142

PROVINCIAL TRUNK HIGHWAY SYSTEM
AND MAIN MUNICIPAL ROADS
PROVINCE OF MANITOBA

REPRODUCED FROM ROAD MAP OF

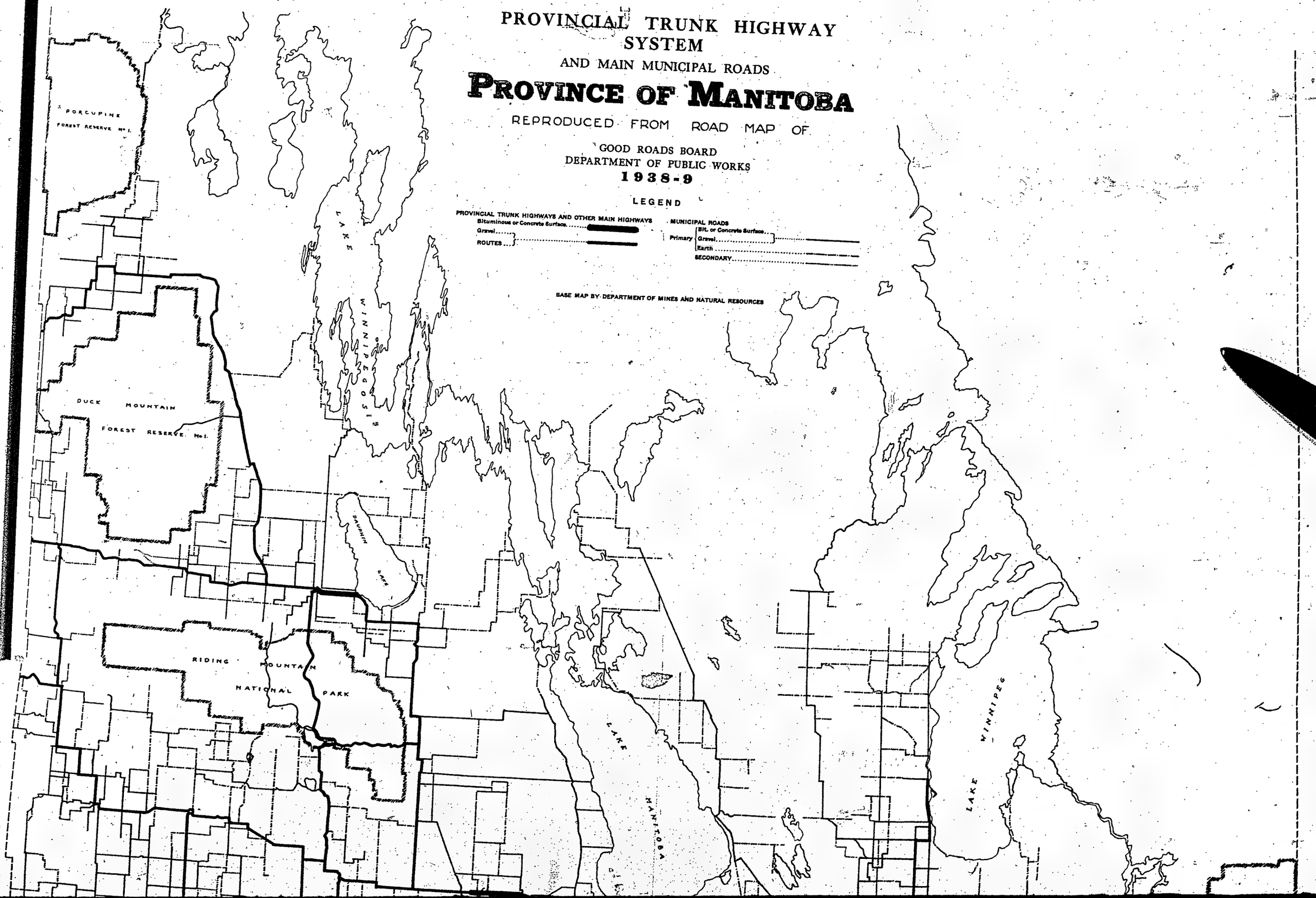
GOOD ROADS BOARD
DEPARTMENT OF PUBLIC WORKS
1938-9

LEGEND

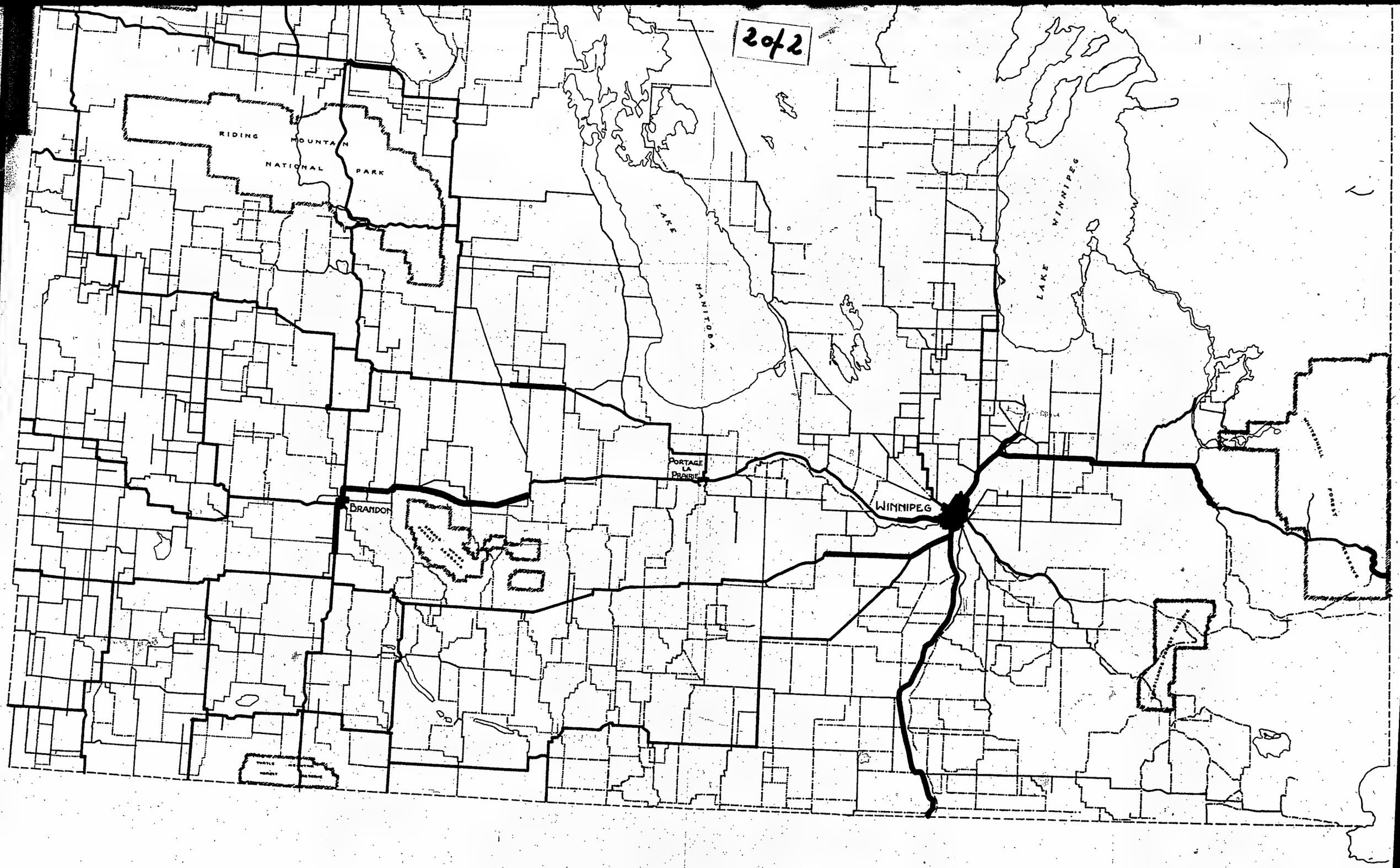
PROVINCIAL TRUNK HIGHWAYS AND OTHER MAIN HIGHWAYS
Bituminous or Concrete Surface
Gravel
ROUTES

MUNICIPAL ROADS
Primary: Bit. or Concrete Surface; Gravel; Earth
SECONDARY

BASE MAP BY DEPARTMENT OF MINES AND NATURAL RESOURCES



2 of 2


RIDING MOUNTAIN NATIONAL PARK
LAKE MANITOBA
LAKE WINNIPEG
PORTAGE LA PRAIRIE
BRANDON
WINNIPEG
WHITESHELL FOREST RESERVE

vary from 13 per cent to about 67 per cent.

Hard surfaced roads suitably designed and built for vehicles of about 3 tons gross weight would prove satisfactory for probably 95 per cent of the motor vehicle traffic in Canada today. It is therefore clear that any additional cost for the construction of stronger roads and any excessive cost of maintenance of ordinary roads due to their use by the heavier vehicles are directly chargeable to the relatively small number of such vehicles, and in addition a further charge should be made against the heavier vehicles for the extra road space occupied by them as compared with ordinary vehicles.

Little information is available regarding the effect on maintenance charges of heavy traffic because if the roads at the start are designed to accommodate heavy vehicles, the damage caused by the passage of such vehicles over the roads is automatically brought within reasonable limits. On ordinary roads there is usually no way of attributing accelerated wear at any particular point to any special class or kind of vehicle because the roads are open to all kinds and classes, but occasionally an opportunity is presented of studying the effect which the character and volume of traffic has upon the deterioration of roads.

The Chief Engineer of the State Highway Department of the State of South Carolina reports such a case which came under his observation. A bridge built in 1925 had a floor covering of one-half inch bituminous surfacing. An average of 225 ordinary vehicles, including a small percentage of trucks, crossed this bridge every day for two years making a total of about 160,000

vehicles, which averaged perhaps about 2 tons gross weight each, or a total of about 320,000 tons of traffic. In 1927 the road was closed to general traffic and materials for about 9½ miles of pavement were hauled over this bridge. The material was handled in trucks having a gross weight of about 10 tons loaded and about 6 tons empty. The total gross weight hauled over the bridge by these trucks was about 50,000 tons.

The bridge surfacing, which had withstood 2 years of ordinary traffic, aggregating about 320,000 tons, without damage, was practically destroyed by about 50,000 tons of heavy truck traffic.

This Chief Engineer states that, based on his observation and experience, his opinion is that the damage caused to roads by heavy vehicles is not in proportion to the weight of vehicle: i.e., a 5-ton truck will do more than five times the damage a 1-ton truck will do.

The gross weight, i.e., the weight of the vehicle itself plus its load, is the load which the highway has to carry; it influences to the maximum degree the amount of damage done to the highway and is a prime factor in determining the design of modern highways and bridges. The gross weight is the only characteristic common to all vehicles which is closely related to deterioration of the road and should, therefore, be used as the best single measure for the assessment of vehicle taxation. To assess private automobiles on a wheel-base basis, and other motor vehicles on a different basis, gives no common measure by which equity, or inequity, of taxation as between the various classes of vehicle can be determined, with any degree of accuracy, or satisfaction to all concerned.

TAXATION OF VEHICLES

The basis of taxation for vehicles using facilities provided by the state should, of course, be the cost to the state of the provision of such facilities, hence the first step is the determination of the cost, to the state, of the highways which have been provided, and then the determination of the method of taking care of the cost. There are, in the main, two ways to proceed,-

First, set aside in addition to actual current costs, a fund for depreciation, or

Second, adopt a policy of "pay-as-you-go", i.e., spend no more on capital or maintenance account than is available from revenue from year to year.

Either method is perfectly sound if steadfastly adhered to but the "depreciation" method would be much the more difficult to apply for the reason that no one can accurately forecast the volume or type of traffic that any one road will have to carry and thus determine the probable life of the road. If this were possible a depreciation fund could be set aside each year so that when the road had to be rebuilt new money would not have to be borrowed.

In a study by Mr. F.C.S.Evans, C.P.R. member of the Standing Committee of the Railway Association, reference is made to three reports on the matter of highway transport costs and taxation,-

1. Report of the Royal Commission in Great Britain
2. Report of the Duff Commission in Canada
3. Report of the Salter Conference in Great Britain

The Royal Commission in Great Britain made a study of the whole subject of co-ordination and control of transport, but made

only a passing reference to the question of highway costs and the motor vehicle. The report did suggest, however, that the motor vehicle should pay two-thirds of the total cost of highways.

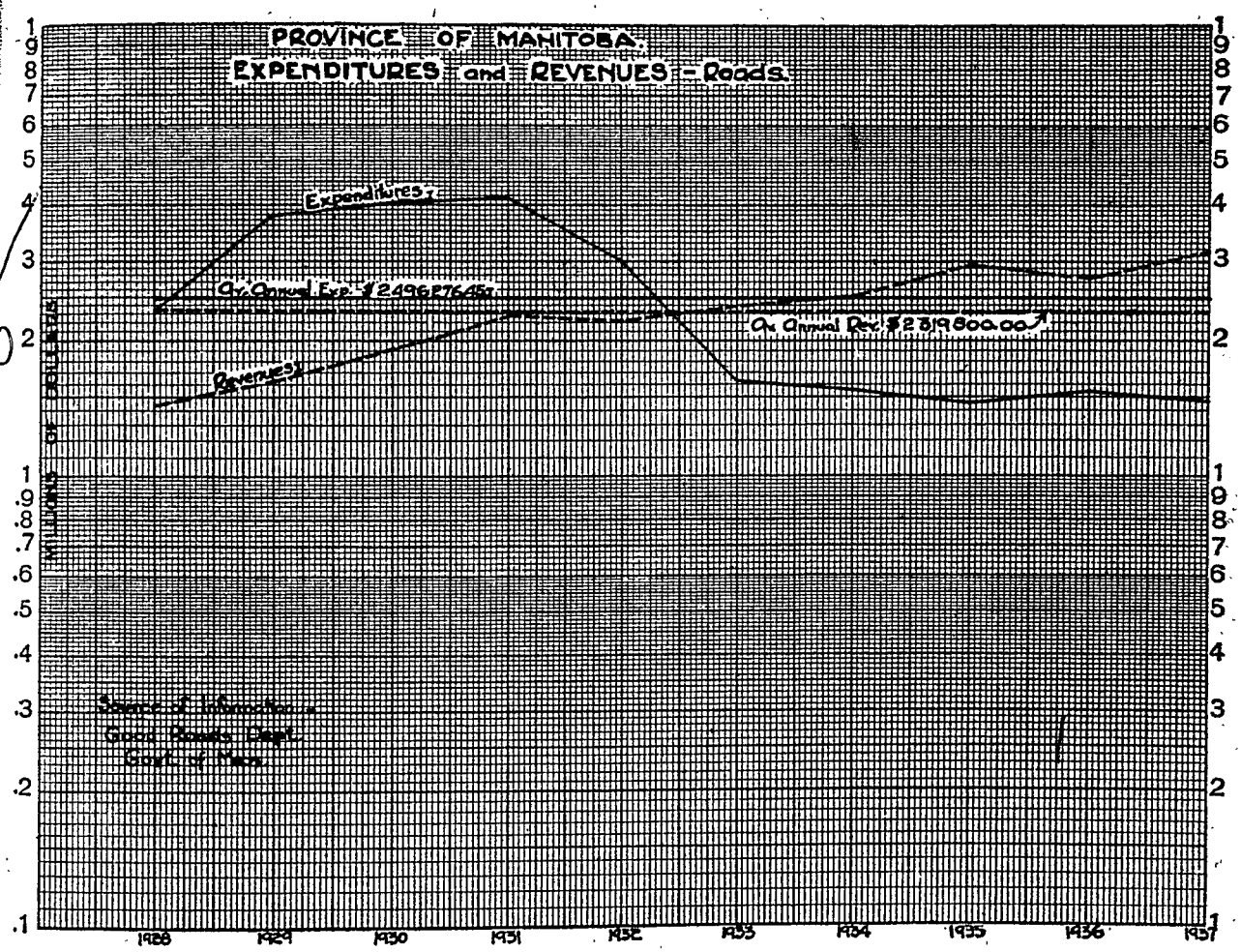
The Duff Commission suggested also two-thirds in urban areas and possibly more in undeveloped areas.

The Salter Conference was appointed as a result of the Royal Commission to go more thoroughly into the question of costs, and the allocation of these costs amongst highway users. This conference, which was composed of equal numbers of railway representatives and motor transport representatives, determined that,-

1. Motor vehicles should pay the total annual cost of the highways

2. The incidence of the payment for highways among the various classes of motor vehicles should be on a use basis - a combination of the gross ton-mile and gasoline consumption being the recommended units.

The Salter Conference set up, and recommended, a method of determining the amount of taxation for vehicles and so far as is known this was the first serious attempt to attack the problem of highway costs and vehicle taxation in a scientific manner. Highway operations are carried on under permit issued by a Traffic Commission. Appeal from decisions of this Commission is provided for with the result that careful consideration is given to each application, and necessity is a real factor in the granting of permits.


PROVINCE OF MANITOBA.
EXPENDITURES and REVENUES - Roads.
Expenditures
Av. Annual Exp. $2496276.45
Av. Annual Rev. $2319800.00
Revenues
MILLIONS OF DOLLARS
Source of Information:-
Good Roads Dept.
Govt. of Man.
1928
1929
1930
1931
1932
1933
1934
1935
1936
1937

ECONOMIC POSITION OF PROVINCE RESPECTING ROADS

The mileage of the Provincial Road Systems as at December 31, 1937 was as follows:

		'Special' Roads	
Concrete	11.20 Miles	Assiniboine Pavement	5.85 miles
Bituminous	315.30 Miles	Norgate-Clear Lake gravel	3.00 miles
Gravelled	11,236.87 miles		
Graded	4,724.02 miles		
Unimproved	74,713.00 miles		
Total	91,000.39 miles	Total	8.85 miles

The amount invested by the government under the Good Roads Act, as at December 31, 1937 was $19,314,870.59. This is an average investment of $1,185.88 per mile of improved road.

In the ten year period 1928-1937 inclusive, the expenditures on roads were as follows:

Current revenue -	$13,889,281.50
Capital expenditure	11,073,483.00
	$24,962,764.50

In the same period revenues received were:

Gasoline tax	$13,234,000.00
Motor Vehicle licenses, permits and fees	9,964,000.00
	$23,198,000.00

Thus, expenditures exceeded revenues by a total of $1,764,764.50 or an average yearly loss of $176,476.45, despite the drastic recession in Capital Expenditure from $2,696,728.75 in 1928-29 to $8,393.50 in 1936-37 and the increase in revenues from $1,426,000.00 in 1928 to $3,144,000.00 in 1937.

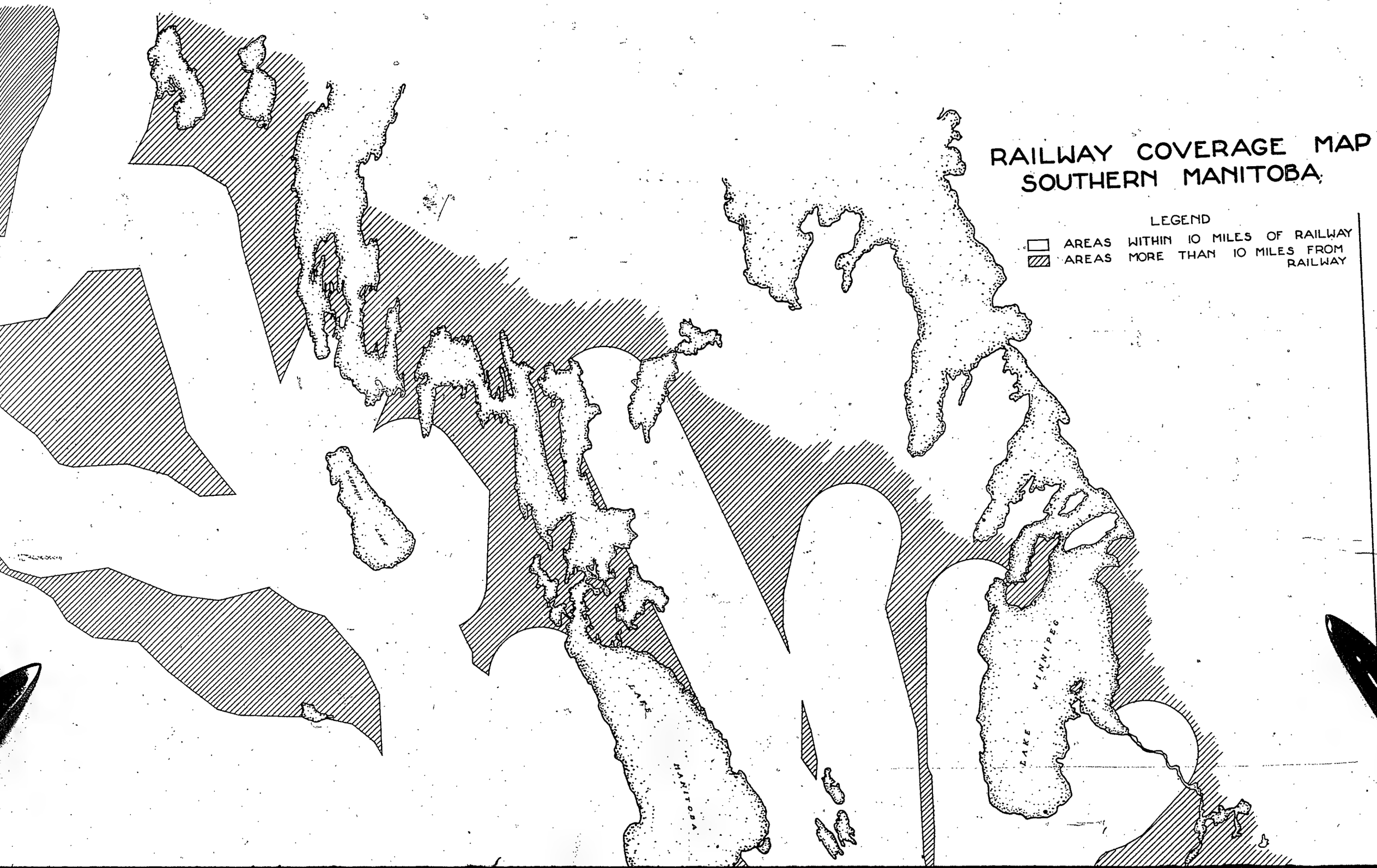
In the appendix, statement No.1 sets forth in some detail, by years, the expenditures and revenues. The accompanying chart, on which the yearly totals of expenditures and revenues have been platted, will

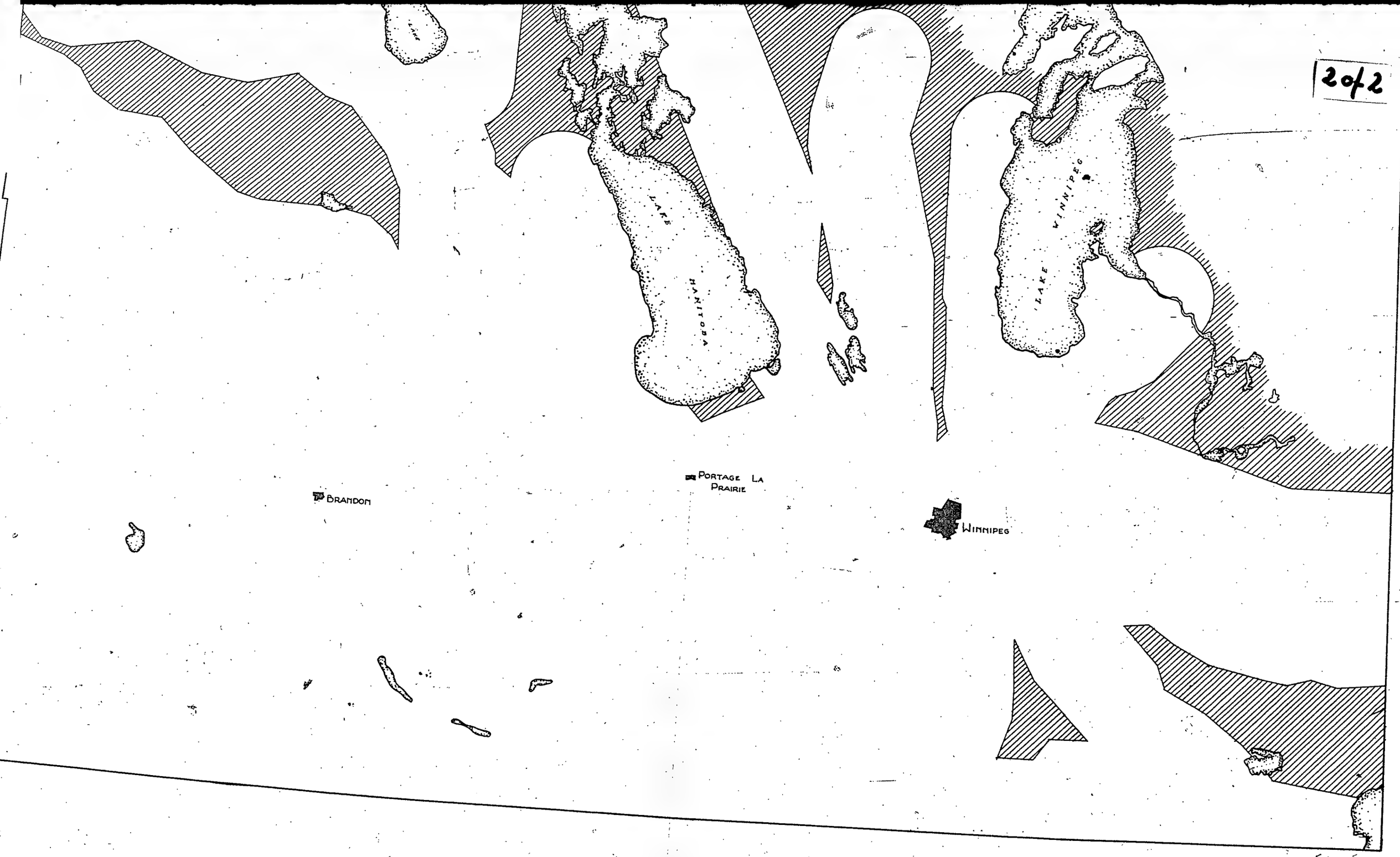
enable the whole picture to be more conveniently visualized. It will be noted on the chart that it was not until the year 1933 that annual revenues exceeded annual expenditures - a condition which has continued since. But the increase of revenues over expenditures in the last five years has not been sufficient to overcome the adverse differential of expenditures over revenues during the years 1928 -33. This fact is indicated on the chart by the horizontal lines which represent the average yearly expenditures of $2,496,276.45, and the annual yearly revenues of $2,319,800.00.

It may be of interest to point out that in the year 1937 the total expenditures on roads amounted to $1,483,701.92, including $989,033.46 for the payment of interest on bonds under the Good Roads Act, sinking fund charges and discount on bonds. This figure constituted 66.66% of the total annual expenditure. Also during 1937 the amount spent on maintenance was $323,123.65, which is 68.5% of the 10 year average for this item of expense. The "high" for the 10 year period was $806,851.93 in 1931.

The above is the situation as shown in Statement 1 of the Appendix which was furnished by the provincial authorities. However, analysis would indicate that this is not the whole picture. It would appear that from 1932 to 1937 inclusive, full maintenance expenditures have not been made, and further, that the retirement of capital indebtedness has not been sufficiently provided for. The favorable showing indicated in this statement is aided considerably by these omissions. They are deferred liabilities which must be met and should be provided for. It should also be mentioned that no consideration has been given in this study to the question of urban highway debt and charges which form a very important and extensive part of the entire highway situation.

1 of 2


RAILWAY COVERAGE MAP
SOUTHERN MANITOBA
LEGEND
AREAS WITHIN 10 MILES OF RAILWAY
AREAS MORE THAN 10 MILES FROM RAILWAY
DAUPHIN LAKE
LAKE MANITOBA
LAKE WINNIPEG


LAKE MANITOBA
LAKE WINNIPEG
PORTAGE LA PRAIRIE
BRANDON
WINNIPEG

RAILWAY vs. HIGHWAY

Highway and railway transport, as is well known, are both competitive and complementary. The flexibility of the motor vehicle as compared with the more rigid rail service is an important feature of the service it provides, but on the other hand the range of operation and capacity of the motor vehicle being very limited when compared with those of the railway, indicates a functional difference between them. Railways provide that efficient and economical mass transportation media upon which our highly developed basic industries and commerce generally are in the highest degree dependent.

Highway transport cannot be a factor in the movement of primary products such as grain and coal or products of mines, forests and fisheries. On the other hand, as intimated above, highway transport has a definite place in the short-haul field. Somewhere between the two extremes of the transportation of bulky commodities long distances and smaller articles short distances lies the limit of the economic field of operation for highway transport and until that limit is determined it is clear that duplicate transportation facilities exist to the economic disadvantage of the country as a whole.

A study of the railway "coverage" map, a provincial highway map, and of the list of franchises granted to highway transportation agencies, will indicate the extent to which duplication of transportation services exists in the province of Manitoba at the present time.

The determination of the economic field of operation of highway transport is a highly complex problem and one that cannot be solved by any single rule-of-thumb method. For instance such matters as the following are involved:-

(1) The effect on maintenance costs of the operation of motor vehicles of various types and weights at various speeds over the different kinds of roads in the province.

(2) What proportion of highway costs should be borne by motor traffic

(3) Allocation of such costs equitably to the various types of motor vehicle.

(4) True cost of operation of various types of motor vehicle.

(5) What, if any, additional expense has been incurred by the province in providing highways of higher class, wider bridges, etc., for commercial transport use, than ordinary use would require.

Highway and railway transport being, as stated above, both competitive and complementary the problem is to so adjust services and conditions of operation of each facility that each will occupy that place in the transportation mechanism of the province which it is economically best fitted to occupy. It is obvious that no facility can continue indefinitely to provide services that are unremunerative; sooner or later a halt has to be made. In the case of highway transport the operator of an unremunerative route simply ceases to operate - in the case of a railway under similar circumstances, application is made to the Board of Railway Commissioners for permission to cease operation and abandon the line, and the story of Board Order #55671, dated March 3, 1938, has been given elsewhere in this report as a concrete instance of permission being given to abandon a railway line for the reason that, as stated by the Chief Commissioner, "the

heavy operating loss suffered by the applicants entirely outweighs any loss or inconvenience which will be suffered by the public".

The Salter Conference in England, to which reference has already been made, in its report, set up and recommended a method of determining the amount of taxation for motor vehicles as well as a set of working conditions, but apparently nothing was done as regards the determination of the limits of the economic sphere of operation for motor vehicles. This feature cannot be overlooked when two agencies must work together in the same territory, if the fundamental principle of "a fair field and no favor" is to be followed, and a proper division of function is to be established.

A more recent "Report on Annual Highway Costs in the province of Ontario" (February 21, 1938) by Messrs. Breed, Older and Downs is an exhaustive study of

(1) determination of the annual cost
(2) division of the annual cost between the general public and the motor vehicle owner
(3) the allocation of the motor vehicle portion between the different types of motor vehicles.

The above two reports are most valuable contributions toward the solution of a problem which has arisen in the last 15 or 20 years and might well be used as bases from which to continue the study in so far as the province of Manitoba is concerned.

It is not, of course, for this report to suggest matters of policy, but regarding the whole question of highway transport a suggestion may be in order.

On the staff of our provincial University are men of outstanding ability in t engineering , economics, mathematics, agriculture and allied subjects who are thoroughly conversant with conditions peculiar to the province (climate, soil, production, distribution and consumption of commodities, industrial activities, etc.), and the

suggestion is that if the whole problem were attacked by the combined skill of this highly efficient staff a solution equitable as between the various forms of transportation agencies and of permanent economic value to the province would be worked out.

Public Service Vehicles

In the Appendix - Statement No. 4 - will be found a condensed statement of the operations of Public Service Vehicles in the province for the year 1937. Statement No. 5 gives some additional statistics including commercial trucks and Statement No. 6 indicates the routes travelled by P.S.V. (buses) in the year 1937.

Statement No. 4 is a compilation of certified statements filed by carriers as required by Clause 106, sub-section 2 of the Highway Traffic Act, and while this statement contains much essential data there is one item which should be amplified, viz; tonnage carried by trucks. At the present time there is no information available as to the consist of this tonnage.

It is suggested that commodities handled should be reported monthly under classifications somewhat similar to those used by the Dominion Bureau of Statistics where there are 5 general classes, viz;

Agricultural products
Animal "
Mine "
Forest "
Manufactures & Miscellaneous

These are again subdivided into 76 sub-classes and the information thus provided is most useful in many ways. For instance, it was from the Dominion Bureau of Statistics figures that the charts, following page 55 of this report, were prepared.

Statement No. 7 in the Appendix shows a few truck routes in the province for the year 1935 as well as the parallel railway services. Similar information for years subsequent to 1935 is not readily available but this statement will indicate the duplication of transportation service which existed during that year. In 1935 there were 69 buses and 514 trucks and trailers, and in 1937 these figures were, 84 and 613 respectively (Statement No.5 Appendix), so that duplication of service in 1937 was probably greater than in 1935.

Excerpts from Sec:96 of the Highway Traffic Act read as follows:-

> "The Board shall have a general supervision over motor carriers and operators of public service vehicles and commercial trucks in their relations to the public, the railways and to one another."
> Sub.Sec (C) "To specify the routes and the nature of the routes over which public service vehicles and commercial trucks may operate, and to assign the district or territory to be served by public service vehicles, and to determine the number of such vehicles which may be permitted to serve in any district or area or along any route or highway".
> Sub.sec (i) " To prescribe the passenger and load capacity of public service vehicles and the maximum weight and kinds of express or other freight or property which may be carried by them, and the size and weight of packages".

The above will indicate how complete are the regulatory powers which the Board has over public service vehicles and commercial trucks, but when one sees these vehicles licensed by the Board to operate in territory whose transportation requirements have been taken care of by the railways ever since the organization of the province as a unit, it would appear that "relations to the railways" has played a very minor part in the granting of truck licenses.

As mentioned elsewhere in this report, communities are not particularly concerned over the welfare of the railways. The railways, as a rule, were built prior to the existence of the community, hence

are considered as part of the established order of things, like sunrise and sunset, and it is only when deprived of the services which only the railways can provide that the community realizes its loss.

No railway wishes willingly to abandon its lines or services and leave any community stranded, but, like any other business organization, a railway can not continue indefinitely to operate at a loss. With the increasing efficiency and numbers of motor transport units it becomes more and more urgent that a study of the question of determining the proper place of each transport agency in the whole transportation mechanism of the province, by a technical body, as previously mentioned, should be undertaken without delay.

CHAPTER VI

TRANSPORTATION AND THE MINING INDUSTRY

In spite of the rail and water facilities available in Manitoba, transportation into Manitoba's Pre-Cambrian areas has presented difficulties which had to be overcome by the operator undertaking the development of a mine at a considerable distance from the regular transportation facilities.

Mineral discoveries are not usually made on the travelled routes; rather do they appear to occur in the remoter and somewhat inaccessible places. Routes to such places are not normally direct or easy, while seasonal vagaries present problems in themselves. One mine may require a large programme of boat transportation in summer, followed by winter freighting. Another mine may be more economically reached by winter freighting, where large quantities of supplies have to be hauled during that season to carry the development and production work of the mine over a long period. This seasonal problem is then important and demanding, so that in out-of-the-way properties it is a major operation.

Twenty-one years - or since the first winter freighting was done to the Mandy property in 1917 - have seen a marked change in transportation methods in Manitoba, as elsewhere, for in that time the horse-drawn sleighs have given way to the tractor with its great loads and speedy travel. Particularly for the heavy machinery andgreat quantity of supplies that have to be transported in a short season, tractor haulage has removed many of those worries which, at one time, confronted the operator in the wilds. Now the bulk of the requirements for the long season when ground freighting

is impossible can be taken care of in winter, and such lesser requirements as come during the summer season can be met by air transport. Today the frontiers are served both winter and summer by aeroplane. And, while transportation to and from the industrial centres is thus maintained both summer and winter, that other form of communication, the radio, has come as a great boon to mining communities, as it has to all places remote from the normal centres of activity.

A review of the progress made in transportation methods into Manitoba's mining fields is not without interest, as it includes the winter hauling of large quantities of machinery and supplies, in the first instance by horses and later by tractor. To the Mandy mine on Schist Lake the first considerable volume of freight was moved in 1917. Turning to the accounts of that early mining activity in Manitoba one reads:

> "In December, 1916, the Mandy Mining Company let a contract for hauling of at least 3,000 tons of ore to the head of navigation, some 40 miles distant. During the summer of 1917, 3,300 tons were conveyed by barge to The Pas and then shipped to Trail, B.C. The total transportation distance is approximately 40 miles by wagon, 130 miles by water and 1,200 miles by rail. This was, therefore, an unique undertaking in mining transportation ----. In 1918, 6,000 tons of ore were shipped and in 1919, 15,000 tons of ore were ready for transportation and 200 teams were at work on a 40 mile stretch between the mine and the head of navigation. The average load of a single team of horses for the winter haul was 6½ tons and the cost of transportation 37½ cents a ton-mile. At the peak 300 teams were employed".

Freighting of machinery and supplies to the Flin Flon property was done from the winter of 1916 on. In summer the route from The Pas to Sturgeon Landing and thence across to Lake Athapapuskow was

used, and in winter the road followed the Saskatchewan river for a short distance above The Pas and then, leaving the river, by Reeder, Rocky and Sturgeon lakes to Sturgeon Landing, and from there over the same route as the summer one, only across the frozen lakes.

In the winter of 1926-7, the building of a power plant and a pilot mill at Flin Flon required much heavier freighting then heretofore. Following the decision of the Whitney and Newmont interest of New York and Mining Corporation of Canada to go ahead with the bringing of the Flin Flon mine into production, Hudson Bay Mining and Smelting Company, Limited, was incorporated and arrangements were completed for the building of 87 miles of railway from the Hudson Bay line. Early in 1928 construction was under way.

The development of the Sherritt-Gordon mine was the next to follow Flin Flon, and on January 10, 1928, the work of hauling plant and supplies to the property was started. A winter road, 80 miles in length, had to be prepared from mileage 55 on the Hudson Bay railway. By March 16, 2,380 tons were hauled, 150 teams of horses, three Holt and one Lynn tractor being used in the work. The supplies hauled were intended to look after 140 men until the end of 1928.

With the completion of the railway to Flin Flon, Hudson Bay Mining and Smelting Company, Limited, prepared immediately for the movement of some 25,000 tons of material and equipment from Mile 86 over 69 miles of winter roads to Island Falls on Churchill river, where hydro-electric power for the Flin Flon was to be developed. In the work 12 Lynn tractors and other lighter trucks were used.

The freighting was done on 150 special 60-inch gauge sleighs. Small camps were erected at various places along the road. Tractors and loads were despatched practically on schedule and kept track of en route. Roads were kept ploughed after every snow-storm over the route which comprised 44 miles over lakes and 25 miles over portages. Between December 15 and March 15, all the freight was moved. In some instances loads up to 120 tons were hauled by one tractor.

The railway was also to serve the Sherritt-Gordon mine, permitting of a shorter haul from Cranberry Portage than that of the previous winter. While awaiting the construction of a railway from Cranberry Portage to the Sherritt-Gordon mine, a winter road, 54 miles in length, was made, using portages and lakes. A total of 3,600 tons of freight was hauled in a period of about 90 days, at a cost of 27 cents per ton-mile. The hauling was all done by Lynn tractors, using trains of sleighs for each tractor.

In the winter of 1929-1930, another 12,000 tons of freight were hauled from Mile 86 to Island Falls. With all equipment on the ground, the power plant was made ready to supply power to Flin Flon by July, 1930.

The use of the tractor as a means of transport over comparatively long distances was definitely settled in these winters of 1929 and 1930. Distance no longer had any terrors for the mine operator, and, with another chapter written into the history of mining in Manitoba, the tractor, a few years later, made possible the development of a mine such as God's Lake, 134 miles distant from railway facilities. With experience, another 125 miles is

now added to this as mines are being opened up in Ontario directly to the east of God's Lake.

During the first three months of 1935, 4,713 tons of machinery, building material and supplies were hauled over the winter road from Ilford to the God's Lake mine. Of this, 1,600 tons went to the Kanuchuan Power Development. The haul amounted to 668,600 ton-miles and was made at an overall cost of 22.85 cents per ton-mile, exclusive of depreciation.

The 1936-1937 winter-freight hauling activities were carried through with much success. Due to the variable nature of the ice conditions on the several lakes, the season was short, but nevertheless, the stipulated tonnage was safely transported. From Ilford, Mile 286 on Hudson Bay Railway, the freight depot, there was hauled to God's Lake by tractor a total tonnage of 2,365. In addition to this a considerable tonnage was hauled into the Sachigo river area in Ontario via God's Lake.

Transportation into the Rice Lake area has been taken care of both winter and summer. The San Antonio mine in winter is served by road 40 miles from Pine Falls, while the Central Manitoba section, including the Gunner and Oro Grande mines, has been served by winter road 55 miles. In summer San Antonio is served from Winnipeg by Lake Winnipeg, Hole River and road, while the Central Manitoba section is served by the same route via Cariboo Landing and water route to Long Lake and thence by road.

During the summer of 1932, camps were built for the Island Lake mine. Mine and mill equipment, together with supplies, was assembled at Selkirk and shipped to Norway House at the north end of Lake Winnipeg. Early in 1933 this material was transported 174

miles over winter road to the mine at Island Lake. The last of the material reached its destination March 29th. Much difficulty was experienced in freighting operations due to heavy snowfalls before the lakes and muskegs were sufficiently frozen. The first trip with tractor took one month to complete. During thd hauling, two jar-crushers and one 60 h.p. tractor were lost through the ice. The two crushers were later recovered.

The following will give an idea of the distances that have had to be travelled in freighting for mining areas in Manitoba:

Northern Manitoba:

The Pas to Sturgeon Landing	125 miles
Sturgeon Landing to Lake Athapapuskow (Camp 2)	16 miles
Lake Athapapuskow to Mandy Mine	28 miles
Lake Athapapuskow to dock at Ross Creek	32 miles
Flin Flon to dock at Ross Creek	2 miles
The Pas to Flin Flon	92 miles
Flin Flon (mile 86) to Island Falls	69 miles
Mile 82 (H. B. Ry.) to Halo's Landing (Herb Lake)	12 miles
Halo's Landing to Herb Lake settlement	10 miles
Mile 55 (H. B. Ry.) to Sherritt Gordon Mine	80 miles
Cranberry Portage to Sherritt Gordon mine	54 miles
Cranberry Portage to Elbow Lake	30 miles
Cranberry Portage to Century Mine (Webb-Garbutt)	36 miles
Mile 12 (Optic Lake Siding, Man. Nor. Ry.) to Gurney mine	4 miles
Mile 21 (Homing Siding, Man. Nor. Ry.) to Century Mine (Webb Garbutt)	11 miles
Mile 286 (Ilford, H. B. Ry.) to God's Lake mine	132 miles
Mile 286 (Ilford, H. B. Ry.) to Knee Lake	82 miles

Eastern and
Southeastern Manitoba

Winnipeg to English Brook	125 miles
English Brook portage at Hole River	2 miles
Winnipeg to Manigotagan (Bad Throat) River	120 miles
Manigotagan River to landing above English Brook portage	7 miles
Hole River to Government Landing	20 miles
Government Landing to San Antonio Mine	9 miles
Government Landing to Cariboo Landing	17 miles
Cariboo Landing to Long Lake	14 miles
Long Lake to Central Manitoba Mine	5 miles
Long Lake to Gunnar Mine	6 miles
Central Manitoba mine to Gunnar Mine	7 miles
Great Falls to Central Manitoba mine or Gunnar mine	55 miles
Great Falls to Gem Lake (Diana) mine	51 miles
Central Manitoba Mine to San Antonio mine	18 miles
Pine Falls to San Antonio mine	42 miles
Winnipeg to West Hawk and Falcon Lakes	110 miles
Winnipeg to Norway House	312 miles
Norway House to Island Lake mine	174 miles
Norway House to Echimamish river	55 miles
Winnipeg to Lac du Bonnet	70 miles
Lac du Bonnet to Bird River area	32 miles

CHAPTER VII

AVIATION IN MANITOBA

In his report on the Mining Industry of Manitoba, Mr. Cole frequently stresses the part which the aeroplane has played in the development of the mining industry of this province. He mentions the fact that one exploring party into Northern Manitoba in 1895 had but one service map, made 100 years previously and by a fur trader of the old Northwest Company. Today the explorer entering that field may obtain excellent topographical maps which have been compiled by aerial photography on a scale of 4 miles to an inch; thus, the aeroplane has been of immense value in mapping the northern parts of the province, a service which must precede developmental work.

In regard to prospecting Mr. Cole states:

> "The influence of underlying rock structure on topographic form has been well understood by geologists for many years. However, within recent years aeroplane travel over mineral belts has resulted in major rock structures being clearly defined and exposed for a type of inspection never before possible. Many valuable clues are to be obtained as to the salient features of a prospecting field by a flight over the area, and much wasted time can be eliminated by planning a prospecting programme from impressions gained from an aerial inspection. Conclusions resulting from such an inspection should not be regarded as final in any sense.
>
> With air transportation firmly established as the most effective means of moving men and material into the north country, the Dominion as a whole has been rendered a great service by science. A contrast of the methods followed by the prospector of twenty years ago with those of the prospector of today in getting to a favourable field for summer operations will indicate how chances of mineral discovery should be increased by the use of the aeroplane.
>
> It has been previously indicated that the prospecting season is limited to the period between the middle of May and the middle of October. Formerly, prospectors desirous of entering the field would have to wait until ice had cleared from the northern water routes before leaving Winnipeg. In the fall they would have to anticipate freeze-up by at least three weeks in remote areas. The actual time spent

"in the field would thus be shortened by almost six weeks. This time spent in travel constituted a serious loss in a prospecting season of twenty-two weeks. The introduction of aviation as an aid to prospectors has made it possible for 'planes to land men in remote areas immediately the ice breaks up and to pick them up a day or two before freeze-up sets in. This has greatly lengthened the prospecting season and correspondingly increased chances of mineral discovery".

The fastest means of transportation - air transportation - has come to stay and now performs an essential function in connection with transportation in Manitoba.

The development of air transportation, while comparatively recent, has behind it a period of experimental but steady progress, culminating in the palatial air liners which are now about to link Canada from coast to coast. Aviation in all its branches received an impetus during the World War when the effectiveness and the flexibility of the aeroplane demonstrated its utility as an instrument of defence and offence. During the World War, and in response to a desperate need, aeroplanes were quickly constructed and pilots quickly trained. The achievements of these war-time machines and the pilots who manned them demonstrated once and for all the part that aviation can play in modern civilization. It was only natural, therefore, that in the years following the war those interested in flying should concentrate upon improvements in design and construction, upon improvements in air navigation, and upon improved human adaptation to air transportation.

It was not long after the conclusion of the World War that the stunt flyer and the air circus which barn-stormed the country as an attraction at country and city fairs should yield its place to organized air transportation. For the past 15 years sound progress has been made in aeroplane construction and design. Better and better machines have been produced; machines capable of carrying heavy loads and covering long distances. Motors have been subjected to rigorous tests and have improved year by year until the present aeroplane motor is capable of being subjected to the severest kind of mechanical tests.

In the preceding pages the part which the aeroplane has played and is playing in the development of the mining industry is outlined.

The use of seaplanes in fire fighting in the northern areas has proved entirely successful. It is the only possible way in which crews can be taken to fires quickly enough to be of any use. There are no roads or trails in this huge area, and the only method of travel in summer, other than by plane, is by canoe. In many cases it would take a week or more for a canoe party to ascend some of the rivers, while a plane could fly the same distance in half an hour. A fire protection organization depending on canoes alone is useless and, in the end, many times more expensive than if planes were used. They have seldom been of any use in extinguishing distant fires.

Crews for fire fighting in the north are picked up by plane from small settlements, Indian reserves or from mining settlements scattered throughout the area, and as they are usually experienced woodsmen make excellent fire fighters.

The work of the prospector cannot be capitalized until a mine is brought into operation. Discoveries were made in the northland which would have lain idle for years had mining development awaited

the ordinary forms of transportation - awaited the building of roads, or the building of railway lines. The aeroplane, with its capacity to carry freight, became the instrument providing rapid development of mineral discovery in northern Manitoba and in the northern areas of other parts of Canada. Large aeroplanes, especially designed for freighting rapidly came into the field, transporting from more southern bases all the equipment, all the supplies, and the man power essential to developing mineral properties. Thus, today, mines are in operation in out of the way places - communities have been established and are being built up with the aeroplane the only instrument of transportation.

In the commercial field several important organizations operate out of Winnipeg and westerly points in Ontario. Freight carried by commercial aircraft consists largely of machinery, supplies, etc. for the mines in the northern part of Manitoba and western Ontario. In most of the mining country of the north there are numerous lakes which provide suitable landing for aircraft with floats in the summer and with skis in the winter. The pounds of freight and express have increased very rapidly. The following table shows commercial air traffic by provinces for the year 1936.

PROVINCE	Passengers taken on No.	Freight Loaded Lb.	Mail Loaded Lb.
Prince Edward Island	610	-	105,420
Nova Scotia	505	630	-
New Brunswick	936	5,067	148,345
Quebec	29,949	4,437,253	185,416
Ontario	42,269	12,505,109	252,893
Manitoba	11,779	2,799,081	188,307
Saskatchewan	6,651	836,642	34,475
Alberta	4,150	725,917	85,149
British Columbia	9,183	935,769	33,233
Yukon & Northwest Territories	2,800	582,033	60,125
Foreign countries	891	119,604	13,697
Totals	109,723	22,947,105	1,107,060

It will be noted that the freight carried in Manitoba by commercial aviation organizations amounted to 2,799,081 pounds in 1936. In addition, 188,307 pounds of mail were carried and 11,779 passengers were carried; thus, Manitoba has been an important province from the standpoint of commercial aircraft companies.

Aircraft in Government Services

The aeroplane is becoming an important means of transportation and an important instrument of development and conservation. The aeroplane has become of increasing importance in mapping and surveying the northern areas of Canada, and work has been done which would have taken many years if accomplished by the older methods of ground parties.

Of particular interest to Manitoba is the work being done by the Manitoba Government Air Service under the direction of the provincial forester. In his report upon the Forests of Manitoba Colonel Stevenson refers to the work of air craft in forest conservation as follows:

> "The only means of transportation in the early days in a large part of the forested area, and this was particularly true in the case of the northern part of the province, was by canoes in the summer, over the numerous water-ways, and by dog-teams in the winter. As canoes were the only available means of travel, an attempt was made to give these northern areas some measure of fire protection by use of fire patrols travelling in this way. This method was, however, found ineffectual. Fires usually occurred at remote points and, by the time the canoe patrols arrived, reached such large proportions that it was impossible, with their limited equipment, to extinguish them. Realizing this it was decided in 1921 to experiment with the use of aircraft in this type of work. A number of old war-time flying boats were obtained by the Dominion Air Board and a base established at Victoria Beach on Lake Winnipeg. Systems were worked out for the detection of fires by aerial patrol and also for the transportation of fire crews and equipment from nearby points to suppress them. During the first year's operation of this aerial fire patrol it was definitely proved that aeroplanes, or rather,

"seaplanes, provided the only effective means of fire-guarding this great northern area. This service was improved during the following years and more efficient planes procured. The Air Board providing the planes and flying personnel and the Forest Service the trained fire rangers, fire crews and equipment, and directing the work. The main base was later moved from Victoria Beach to Lac du Bonnet and sub-bases located at Norway House, Cormorant Lake, Beren's River, Winnipegosis and Thicket Portage. In 1923 the Royal Canadian Air Force took over from the Air Board, continuing the work; and the Royal Canadian Corps of Signals co-operated by establishing wireless sets at the different bases and also equipped the detection planes with radio in order to reduce the time required in getting crews to fires. The Royal Canadian Air Force continued this work until the end of the 1930 fire season.

"The Sandilands Forest Reserve was established in 1923. This area had been withdrawn from settlement some years previously. In 1927 the Manitoba Paper Company erected a pulp and paper mill at Pine Falls on the Winnipeg river. In order to locate wood supplies for this mill the Dominion Forest Service carried out extensive forest surveys over a large part of the province. Thousands of square miles were photographed from planes, aerial maps prepared and estimates made by ground crews. These surveys, begun in 1927, were completed in 1929.

"On July 15, 1930, the Dominion Government transferred the forests, together with other natural resources, to the province. This included all forest reserves with the exception of the Riding Mountain, which some months previously had been created a National Park and remained under Dominion control. The Whiteshell Forest Reserve was established in 1931, replacing the Riding Mountain reserve retained by the Dominion.

"On the transfer of the natural resources the Manitoba Forest Service was organized as a branch of the Department of Mines and Natural Resources. This branch took over all the administration and fire protection work formerly carried out by the two Dominion organizations; the Crown Timber and Grazing Branch and the Dominion Forest Service. The staff of the new provincial forest service was recruited from the trained personnel of the Dominion Services and the policy of conservation and development previously adopted by the Dominion continued and improved.

"The Manitoba Forest Service is in charge of the Provincial Forester with headquarters in Winnipeg and to whom the field staff is directly responsible. The province is divided into four Forest Districts, each in charge of a district forester. These forest districts are sub-divided into ranger districts with a forest ranger in charge. The four forest districts are,- the northern district, comprising, roughly, that part of the province north of the 53rd parallel, the southern district

"being, roughly, that portion of the province lying south of the main line of the Canadian Pacific Railway; and the eastern and western districts lying between those two and being divided by a line running north and south, immediately west of Lake Manitoba.

"In 1931 seaplanes for aerial forest patrol were provided by a commercial company. Contracting our flying proved expensive and not altogether satisfactory, and in 1932 it was decided to procure and operate our own aircraft as part of the Forest Service. The Manitoba Government Air Service was organized and was later set up as a separate branch of the Department of Mines and Natural Resources. This Air Service provides planes for all forest activities as well as for necessary flying for other branches of the Department. The main air base of this Service is located at Lac du Bonnet where all overhaul and repair work is done. A sub-base is kept open during the summer months at Cormorant Lake and two seaplanes stationed there for work in northern Manitoba."

CHAPTER VIII

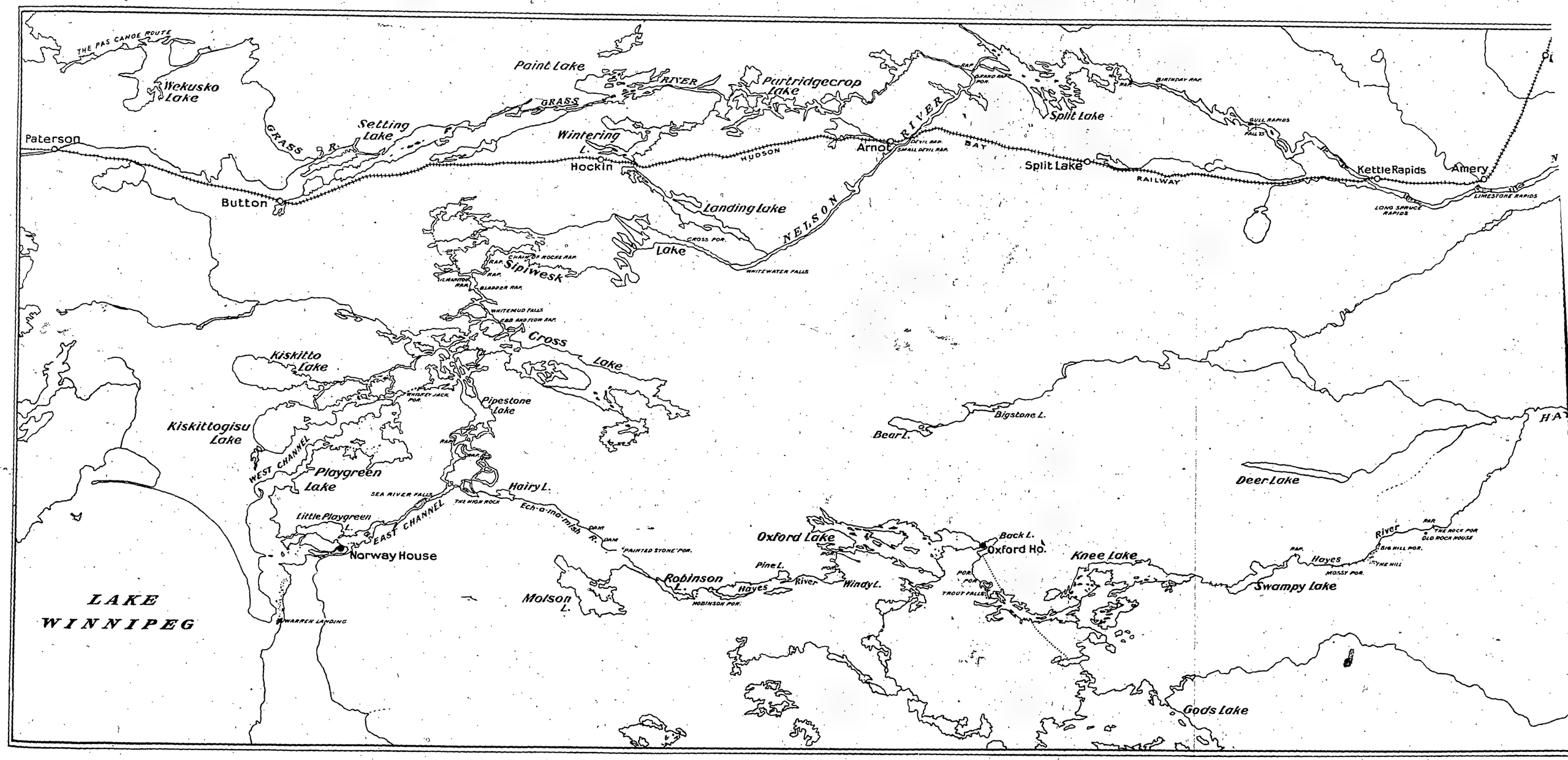
RECREATIONAL TRAVEL IN MANITOBA

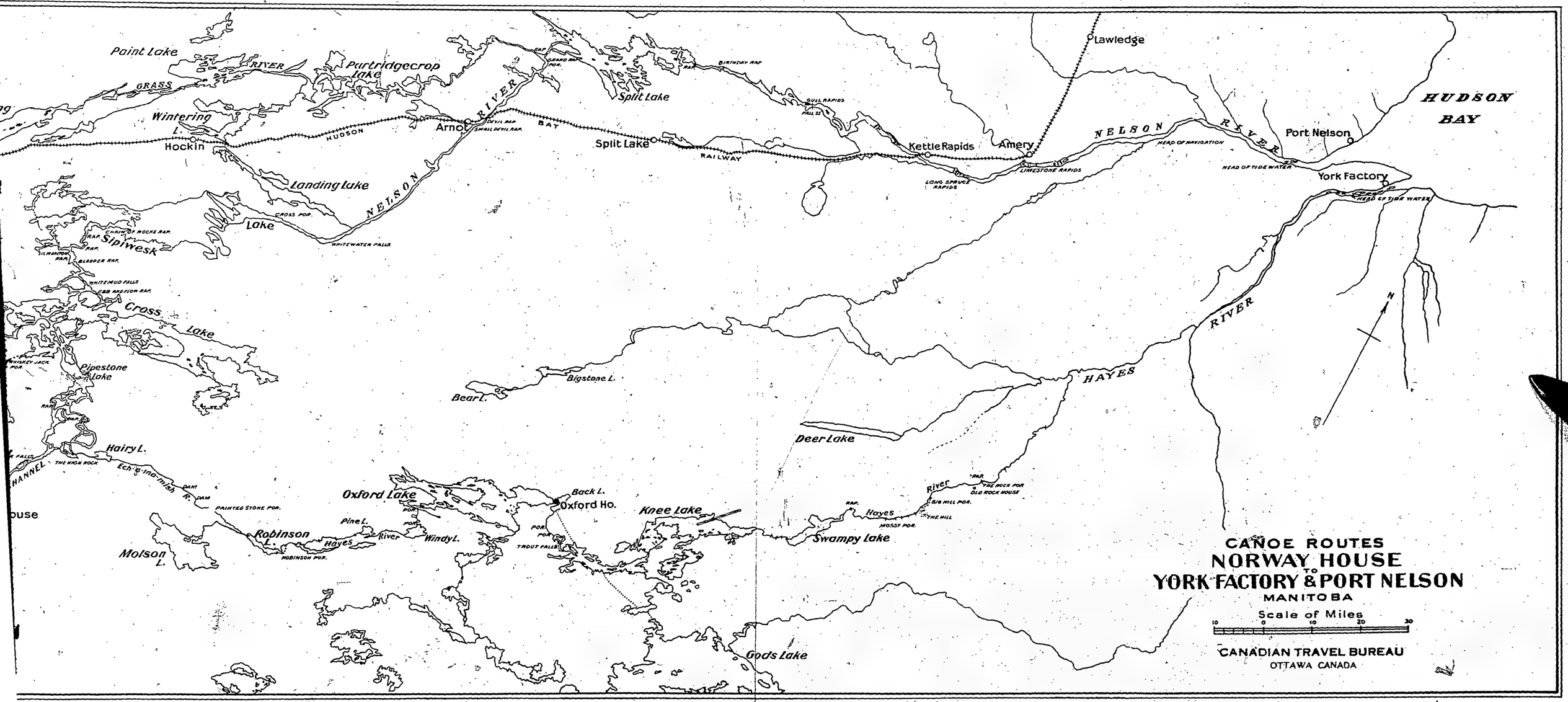
A study of transportation in Manitoba would not be complete without a brief reference to the recreational aspects of travel within the province. It is probably true that the people of Manitoba little realize the recreational facilities which the province possesses within its own border and the appeal of its resources are probably more widely known among people living in other provinces and in the United States. The northern part of Manitoba and the eastern fringe of the province is a network of rivers, lakes and streams, which offer unlimited charm to those who seek recreation and health in travelling the waterways of the province. There are few places in North America where the canoeist can travel in a well mapped country which has not been spoiled by advancing civilization. The lakes and rivers in many parts of Manitoba can be travelled today in the same manner as they were travelled many years ago. The same natural beauty may be seen and the same appeal of the wilderness still remains. Thus we make no apology for including a brief reference to the canoe routes of Manitoba which still have their place in the life of the province along side of the modern means of communication such as railways, highways and present day aircraft.

CANOE ROUTES

Norway House to York Factory

To modern adventurers of canoe and paddle, or the York boat, the trip from Norway House to York Factory is a regal adventure. Three hundred and fifty miles of rivers, lakes and short portages - an adventure for the outdoor man with strength and courage. The map on the following page shows the canoe route from Norway House to


THE PAS CANOE ROUTE
Wekusko Lake
Paint Lake
RIVER
Partridgecrop Lake
GRASS
GRASS R.
Setting Lake
Wintering L.
Paterson
Hockin
HUDSON
Arnot
RIVER
BAY
Split Lake
Split Lake
RAILWAY
Kettle Rapids
Amery
Button
Landing Lake
NELSON
Lake
Sipiwesk
WHITEWATER FALLS
LIMESTONE RAPIDS
LONG SPRUCE RAPIDS
Cross Lake
Kiskitto Lake
Pipestone Lake
Kiskittogisu Lake
WEST CHANNEL
Playgreen Lake
Bigstone L.
Bear L.
Deer Lake
Hairy L.
SEA RIVER FALLS
THE HIGH ROCK
Ech-a-ma-mish R.
Little Playgreen L.
EAST CHANNEL
Norway House
Oxford Lake
Back L.
Oxford Ho.
Knee Lake
Pine L.
Robinson L.
Hayes River
Windy L.
Molson L.
Swampy Lake
Hayes River
Gods Lake
LAKE WINNIPEG
WARREN LANDING


CANOE ROUTES
NORWAY HOUSE
TO
YORK FACTORY & PORT NELSON
MANITOBA
Scale of Miles
10 0 10 20 30
CANADIAN TRAVEL BUREAU
OTTAWA CANADA
HUDSON BAY
Lawledge
Paint Lake
GRASS RIVER
Partridgecrop Lake
Wintering L.
Hockin
HUDSON
Arnot
NELSON RIVER
BAY
Split Lake
RAILWAY
Kettle Rapids
Amery
NELSON RIVER
Port Nelson
York Factory
Landing Lake
Lake
Sipiwesk
Cross Lake
Pipestone Lake
Bigstone L.
Bear L.
Deer Lake
HAYES RIVER
Hairy L.
Oxford Lake
Oxford Ho.
Back L.
Knee Lake
Swampy Lake
Hayes River
Robinson L.
Pine L.
Windy L.
Molson L.
Gods Lake
N

York Factory and the chain of water routes which connects Manitoba's largest inland lake to the salt waters of Hudson Bay.

A remarkable feature of this voyage is the fact that historical memories are brought to mind at almost every turn. Hardy men in the past have made this self-same trip, have conquered the dangers and have thrilled to accomplishment.

NORWAY HOUSE

Norway House was one of the inland fur posts borne of the travail of commercial rivalry. The French traders first and then the Nor'westers were rivals, that had to be met in their own manner - built posts inland. Cumberland House had been built in 1774 on the Saskatchewan river but it was not enough. Other posts had to be built or lose the trade. Accordingly, William Sinclair, August 15, 1801, set out from Oxford House with two birch-bark canoes and six voyageurs to select a site for another fur post. At the south end of Mossy Point, at the entrance of Playgreen lake north of Lake Winnipeg, two small cabins were built, one for a dwelling and one for an Indian shop. Norway House was ready for business.

The origin of the name Norway House is romantic. A party of Norwegian axemen came into the country at York Factory to construct a road between Hudson Bay and Lake Winnipeg in the belief that more goods could be carried by cart and sleigh than by boat. One band of the Norwegians settled on the peninsula between Lake Winnipeg and Playgreen lake. Among the trappers and settlers at Red River this landing place soon became known as Norwegian or Norway Point. Sometime afterwards the Hudson's Bay Company post founded in 1801 was temporarily moved to this peninsula and called "Norway House" - a name it retained when the post was moved back to its original location in 1826.

The present fort was built by John McLeod 1826-1828. The fort was originally surrounded by a picket palisade 15 feet high enclosing a square 150 yards on each side. Here was the spacious council house where Governor Simpson, the Little Emperor of Rupert's Land met the chief factors, factors and officers in the annual council; the low squat bachelor's hall built in 1838 where R.M. Ballantyne, famous author of "Ungava" and other boys' stories, spent his first year as an apprentice to the Company at Norway House; the warehouses, the bell in the belfry above the archway warehouse which gave entrance to the fort which was older than the trading post itself and has the following inscription cast on it in raised letters; "Ship, 'Sea Horse', launched March 30, 1782, Hudson's Bay Company", the sun dial said to have been put there by Sir John Franklin; the powder magazine built in 1838 is the third oldest stone building in the province, Fort Prince of Wales and Lower Fort Garry being older.

Norway House was the centre from which the Hudson's Bay Company governed the wilderness of half a continent, until it surrendered its territories to the Crown. This post before the advent of the railway, was the great distributing depot of the fur trade. Trade goods from England were brought from York Factory on Hudson Bay to Norway House, and from there by York boats they were sent west to the Pacific, north to the McKenzie, and south to the prairies and Red River. Furs from these districts made up the return cargo.

The coming of the railroad marked its decline. A Philip Godsell, F.R.G.S., says in "Famous Forts of Finland",-

> "With the coming of the railroad to the west the old system of transport changed again. The ship still sailed annually to York factory, but only with merchandise for Fort Churchill and the posts adjacent

B

YORK BOAT NEAR NORWAY HOUSE

By permission of the Governor & Committee of the Hudson's Bay Company.

"to York Factory. Steamers carried the goods over the heaving bosom of Lake Winnipeg, where the bark canoes of numberless tribes had once tossed on their annual journey to York Factory. At Norway House the goods were shipped to Gods Lake and Island Lake and other inland posts as in days gone by, but the Indian manned brigades had been reduced to small numbers. By 1906, when I stepped from my canoe and first entered the arched gateway, Norway House had ceased to be the fur trade's centre of the northland, the pivot around which the vast transportation system had revolved. Its status had been reduced to headquarters for Keewatin district - the Land of the North Wind".

The steamer from Selkirk brings summer tourists eager to catch a glimpse of the romantic history of the North West as they visit the old buildings of Norway House.

Norway House is the starting point for a very interesting cruise to Hudson Bay, landing at historic York Factory. The route follows the former fur trade highway along which the old York Boat brigades have left many mementos and legends of their day. The longest portage is equipped with a trolley on rails for transporting canoe and dunnage. Oxford House post is passed, and the course continues down the Hayes River to York Factory at tidewater, 375 miles in all. The return journey may retrace the same route or proceed up the Nelson River to join the Hudson Bay Railway which returns to Winnipeg via The Pas. Wonderful speckled trout fishing is to be had in the Nelson, which is reached more quickly from Gillam Post on the Hudson Bay railway, whence the canoe route may be reversed and the trip completed at Norway House. Norway House to York Factory occupies 25 days easy paddling, or a week's travel with an outboard motor. It is a little over 100 miles up the Nelson from York Factory to Gillam.

The Hayes river has long been an avenue of communication between Lake Winnipeg and York Factory on Hudson Bay, and incidentally it opens up to the sportsman a beautiful region which includes God's lake, Island lake and the Shammattawa river. Pike, pickerel and whitefish may be had in practically all of the streams and lakes and in some lakes sturgeon are found. Lake trout run up to 50 pounds in weight, and speckled trout are caught in many of the streams, 4 to 5 pound specimens being taken from Island river.

The district is generally rocky along the shores, with some good stands of merchantable timber. There is also a considerable area of muskeg.

Flowing from near the northern end of Lake Winnipeg the Nelson river expands in a few miles to form Playgreen lake. From the eastern shore of Playgreen lake the Nelson leaves by two main branches, the eastern one, which this route follows, being itself divided into several channels which all unite in Little Playgreen lake. Close by where one of these channels enters the lake is situated the Hudson's Bay Company post of Norway House.

Leaving Norway House the route crosses Little Playgreen lake and enters the east channel, which has an average width of one mile and is studded with islands. Seventeen miles down stream are the Sea River falls, a chute having a descent of four feet, down which loaded boats are run.

Though many of the rapids that follow may be run in descending, it is necessary to resort to tracking and portaging when making the return journey. The canoeist in traversing this route must bear in mind that the trip described on the following pages was made with York boats, larger and heavier craft than the modern cruising canoe.

Five miles below the falls The High Rock is reached, and here the route leaves the Nelson, and turns east by the Echamamish, a small marshy stream flowing from Hairy lake. Crossing Hairy lake and continuing eastward two small dams having a drop of one foot each are passed, then at twenty-eight miles in a straight line from the Nelson the western channel of the Echamamish terminates abruptly at the Painted Stone. The Cree word designating this river signifies a river or channel flowing both ways, and at this little watershed, less than one hundred feet across, the boats are unloaded and hauled over the low, flat stone to the eastern channel.

Again launching the boats the river is followed for fifteen miles, through Robinson lake, to the most formidable portage on the route, one of over 1,300 yards. The trail, however, is wide and smooth, and the carry avoids a drop of 45 feet in the river.

Seven miles below Robinson portage the river enters a narrow, nearly straight ravine, through which it flows for seven miles to Pine lake, two rapids occurring in the interval. The river is again followed to Windy lake, where the course leaves at the northeastern extremity. From this lake the river runs northwest, or at right angles to its usual course, and at the end of four miles falls into a marsh at the head of Oxford lake. Here there is a chute called Waipinaipinis, the Angling Place, with a descent of six feet. This marsh opens by a narrow strait into the southwest arm of Oxford lake.

Oxford lake is about thirty miles in length and has a maximum width of nine miles. Besides being subdivided by long points, it contains many islands. At the northeastern extremity of the lake, on a rising peninsula, is situated Oxford House, and the extension of the lake beyond this is called Back lake.

From Back lake the river runs southeast for eleven miles, Trout falls being avoided by a portage just before entering Knee lake.

Knee lake has a total length of forty miles, and consists of two principal expansions, connected midway between the inlet and outlet by a narrower portion about nine miles in length running at right angles to the main portions of the lake. The maximum width is six miles, and the whole lake is studded with islands, these being particularly numerous in the central portion.

Knee lake discharges at its northeastern extremity into Swampy lake after ten miles of river. A point of peat about half-way down the northwest side of Swampy lake gives it its name, but the surrounding country, though low, is not swampy. This is the last lake on the route.

From Swampy lake to York Factory the river curves in a north-easterly to a northern course, and for the first nineteen miles after leaving Swampy lake flows through a labyrinth of islands. There is a considerable descent in this portion of the river, which is broken by a great number of rapids, all of which may be run by boats. At the end of this stretch clay banks appear on both sides for the first time, and continue all the way to the sea.

Four or five miles after leaving the labyrinth of islands there appears on the east shore a mound of gravelly earth nearly 400 feet high, a conspicuous landmark known as "The Hill". Several rapids and chutes occur in the ensuing thirteen miles of river, the last of these being known as The Rock, on account of an exposure of dark grey, rather coarse gneiss.

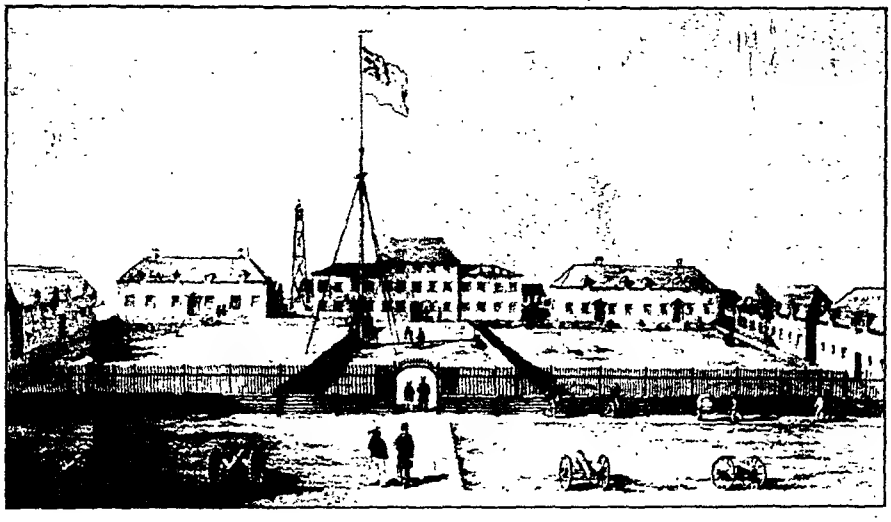
The character of the river changes at The Rock, and from that point downward no more rapids occur all the way to the sea. Along the stream from The Rock to tidewater islands are almost entirely absent. At tidewater, however, are three islands in succession, and below there is a chain of low islands near the south-east side. The stream is shallow at low water and runs with a swift current to tidewater, nine miles above York Factory.

YORK FACTORY

And then York Factory is reached - and more rich historical memories of the early days of the North West.

York Factory, named after the Duke of York who became Charles II was built as a permanent fort by the Hudson's Bay Company in 1684 at the mouth of the Hayes river, on the west shore, five miles from the swampy shore of Hudson Bay. This fort marks the site where fourteen years before Radisson had erected the arms of the King of England on the projection of land between two great rivers, the Nelson and the Hayes. An ideal location for fur trading, for down these broad waters came the canoes of the Assiniboine and the Crees. It was from this factory that young Henry Kelsey made his memorable trip across the prairies to Saskatchewan (1691). York Factory for nearly two hundred years held its position as one of the great distributing centres of fur trade of the north.

Key to the northern fur-trade, it became one of the prizes coveted by the French in the struggle with England. At the close of the seventeenth century, the governor burned it to the ground to prevent capture. The fort was rebuilt the next year only to be again captured by the French and renamed Fort Bourbon. By the Treaty of Ryswick (1697), the French held all forts on the Bay but



YORK FACTORY

By permission of the Governor & Committee of the Hudson's Bay Company.

Albany. These years were made very unhappy for the French at York or Bourbon. The English ships pestered the annual supply boat and frequently prevented it arriving. When the struggle in Europe was finally settled by the Treaty of Utrecht (1714) York Factory and the other posts returned to England. Once again in 1782, its peace was disturbed by a surprise attack of the French. The fort was well defended but the governor, overcome with fear, surrendered. The Hudson's Bay Company demanded payment from the British government for not protecting its fort. The French government made redress in a few months. The period of military conflict was over.

Trading was resumed but only to fall off. Traders -aggressive French and Scotch - came inland. Aroused, the Hudson's Bay Company fought to regain lost territory by building forts inland and matching point by point. In 1821, the curtain was dropped when the rivals united. Then York Factory, found to be nearer Europe than Montreal, came into its own as the distributing centre of the northern fur belt where the goods of the Old World were exchanged for the furs of the New.

York Factory which for a depot in the heart of the wilderness was an immense building, was known to the Indians as "Kache Wuskakigun" meaning "Big House". The compound was a large square of some six acres lying along the Hayes river and shut in by high stockades. The houses are all wooden and on account of the swampy soil, are raised up to escape the water of the springtime floods. At a point of advantage a lofty platform was erected to serve as a "look-out" to watch for the coming ship, the great annual event in the old days of the slow passing lives of the occupants of the post.

The following interesting description of York Factory, as it was 100 years ago, is given by Robert Michael Ballantyne, who visited it in 1843:

> "The principal edifice is the general store where the goods to the amount of two years' outfit for the whole northern department are stored. On each side of this is a long, low, whitewashed house, with green edgings, in one of which visitors and temporary residents during the summer are quartered. The other is the summer mess-room. Four roomy fur stores stand at right-angles to these houses, thus forming three sides of the front square. Behind these stand a row of smaller buildings for the labourers and tradesmen and on the right hand is a dwelling house for the gentleman in charge, and adjoining it the clerk's house; while on the left are the provision store and Indian trading shop. A few insignificant buildings, such as the oil-store and lumber-house, intrude themselves here and there; and on the right hand a tall ungainly outlook rises in the air and just beside it stands the ice-house.
>
> "York Factory being a principal depot had a considerable staff, consisting chiefly of young men who lived in a separate building called "Bachelor's Hall". Here dwelt the surgeon, accountant, postmaster, half a dozen clerks and others. The chief factor was in charge of the post and his authority was absolute and unquestioned".

From 1872 to 1933, it was a Custom's outpost. The coming of the railroad to Churchill caused its sun to set. Many of the warehouses and other buildings have been torn down, but much remains to keep alive the story of its honourable past.

<u>Other Canoe Trips in the same Area</u>
<u>Oxford House</u>
<u>God's Lake and Island Lake</u>

The trip from Norway House to God's Lake and Island Lake posts and return is some 600 miles in length and can occupy six weeks easy paddling. Splendid fishing for speckled trout is possible in God's river near God's Lake post, and also in the Island Lake river, while lake and salmon trout, northern pike and walleyes are also plentiful

at different points. There are some thirty rapids and portages leading to Island lake, and the scenery is delightful. Supplies for the return trip can be purchased at either of the posts mentioned, or return to Winnipeg can be made by thoroughly reliable air transport at very low costs from God's lake.

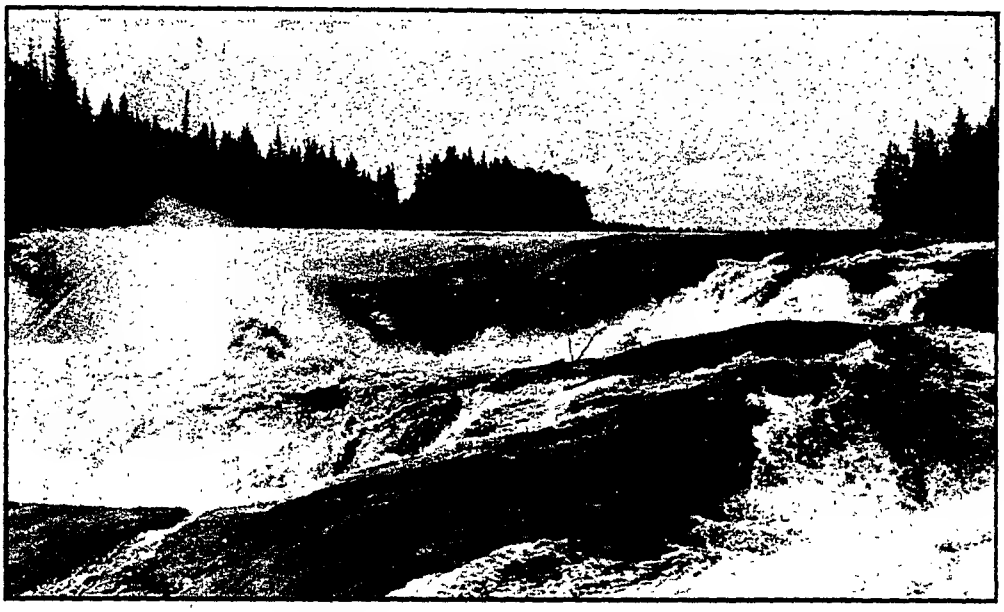
A shorter trip is possible to Cross Lake post and return. Travellers may see the beautiful White Mud Falls, one of the sights of the countryside, and visit the typical Hudson's Bay Company inland post at Cross Lake in a week, returning in time to catch the next boat back to Winnipeg.

Excellent speckled trout fishing awaits those willing to go inland to Oxford House, God's Lake or Island Lake posts. These posts are easily reached by canoe from Norway House, and very little rod fishing having yet been done in these northern waters, excellent sport awaits the angler ready to blaze new trails and fish new waters.

Trips from Gillam, Manitoba.

Gillam is situated at mile 327 on the Hudson Bay Railway, or 327 miles from The Pas, and is located five miles south of Kettle Rapids on the Nelson river. From this point there are many attractive canoe trips with the advantage that Gillam may be reached by railroad during the canoeing season.

Hudson Bay is within striking distance of Gillam, and the canoeist who visits Port Nelson and York Factory is practically assured of seeing seal and white whale. The round trip totals about 225 miles, and can be made comfortably by paddle in two weeks, allowing sufficient time to see historic York Factory and its environs. This trip provides an additional thrill by taking the canoeist to salt water.



WHITE MUD FALLS, NELSON RIVER

Instead of returning to Gillam, new guides could be picked up at York Factory and the trip continued up the Hayes and Steel rivers, past Oxford House post to Norway House on Lake Winnipeg, whence there is regular steamship service to Winnipeg. It is some 375 miles upstream from York Factory to Norway House, and the route follows the old fur trade waterway over which all supplies for Hudson's Bay Company posts in the interior were formerly transported by York boat to Norway House, for distribution north and west and south. Some excellent fishing is to be had on this route, too.

Other suggested canoe trips, varying in duration from one day to a week, can be made from the Hudson Bay Railway. Most notable of these are:

1. Wabowden to Pikwitonei via Setting lake and Grass river.
2. Wabowden to Stitt (Manitou Rapids).
3. Stitt (Manitou Rapids) to Gillam (Kettle rapids)
4. A one day run from Kettle Rapids to the Limestone.

Each of these canoe trips begins and terminates at a point along the Hudson Bay Railway.

A canoe trip in this country provides an entirely different vacation. The refreshing scenery, life in the open, and healthy exercise will set you up for all year. The evening camp fire with aroma of steaming coffee, the appetizing hiss of trout or bacon sizzling in the frying pan, nights under canvas or gleaming stars, will give the adventurer something to remember all winter. There is much hard work and little in the way of comforts on these trips, so only the strong and healthy should undertake them.

This district is renowned for its speckled trout. It is claimed that the abundance and size of these peerless game fish are

hardly equalled on this continent.

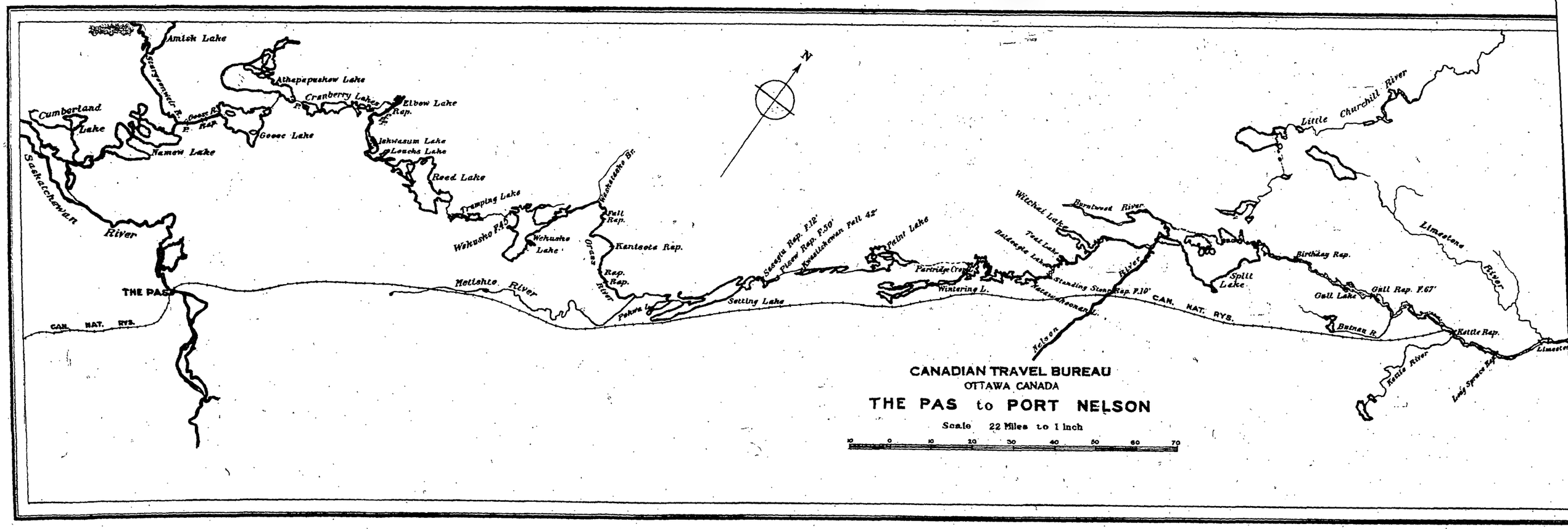
Lake trout, wall-eyes, northern pike and grayling are also found generally in these waters or between here and Hudson Bay. Lake trout up to fifty pounds and spockled trout of five or six pounds are not uncommon.

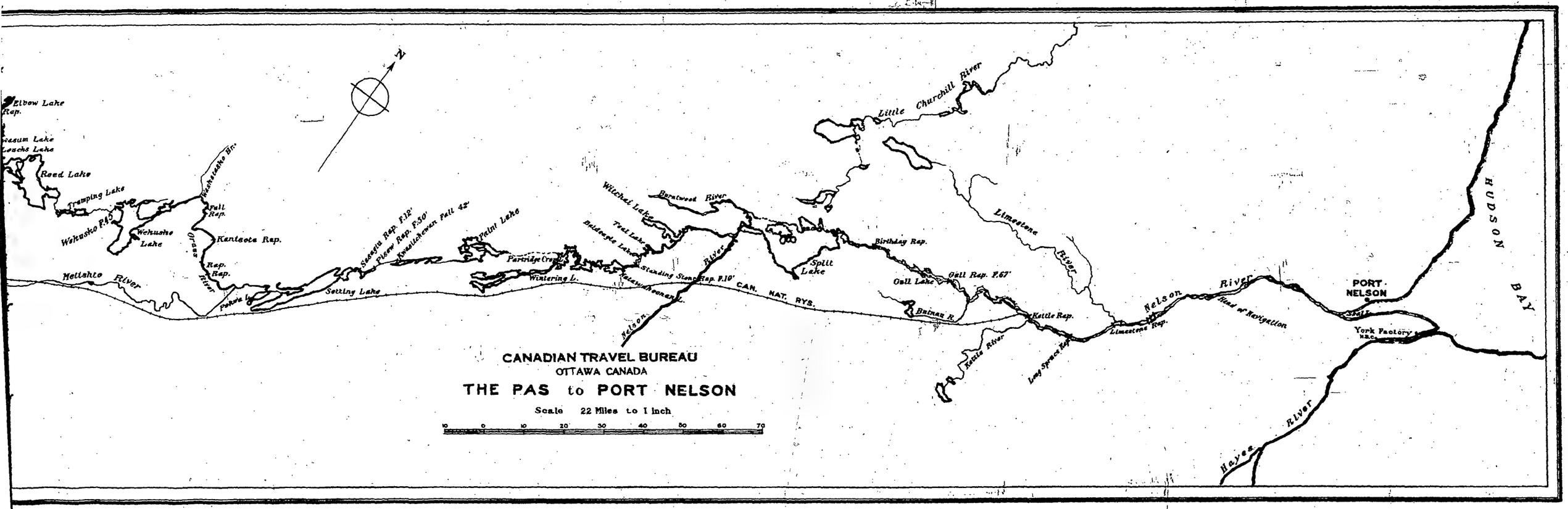
The Pas to Port Nelson

Another adventure awaits the canoeist in a trip from The Pas to Port Nelson on Hudson Bay or to intermediate points. The map on the following page shows the route for this trip.

Entering the Saskatchewan river at The Pas the route follows its course up stream to Cumberland lake, turns northeast across Cumberland and Nameu or Sturgeon lakes to the Sturgeon-Weir river which enters Nameu lake at the northeast corner. After following this river north for 3 miles the route turns northeasterly up Goose river. Two and one-half miles up Goose river is a rapids which is passed by half a mile portage on the north bank and for 3 miles above the portage the river is a series of shallow rapids.

Entering Goose lake the route crosses to the northeast corner where a stream enters from the north which is followed to Athapapuskow lake. This lake is an elongated oval body of beautifully clear transparent water, lying in a general northeast and southwest direction. From the east end of the lake, at a low sandy spot, overshadowed by tall white spruce, Cranberry portage, 1 1/3 miles in length, leads to the southwest end of Cranberry lakes. This portage crosses the watershed between the waters flowing south to the Saskatchewan river and those flowing north to the Nelson. Cranberry lakes form an irregular body of water, broken by two narrow straits and indented by deep bays. From the northeast end of the last Cranberry lake the route follows Grass river northeasterly through an extensive marsh in the bottom of a wide valley to Elbow lake. Turning sharply south around


CANADIAN TRAVEL BUREAU
OTTAWA CANADA
THE PAS to PORT NELSON
Scale 22 Miles to 1 inch
10 0 10 20 30 40 50 60 70
N
Amisk Lake
Athapapuskow Lake
Cranberry Lake
Elbow Lake
Rap.
Cumberland
Lake
Namew Lake
Goose Lake
Iskwasum Lake
Louche Lake
Reed Lake
Tramping Lake
Wekusko Falls
Wekusko Lake
Wasketeko Br.
Fall Rap.
Kantoote Rap.
Orders River
Rap.
Rap.
Pekwa L.
Mettehte River
Saskatchewan
River
THE PAS
CAN. NAT. RYS.
Seagull Rap. F.12'
Plow Rap. F.30'
Kwatchewan Fall 42'
Setting Lake
Point Lake
Partridge Creek
Wintering L.
Witchai Lake
Trail Lake
Baldeagle Lake
Burntwood River
Nelson
Nasawkeosonas L.
Standing Stone Rap. F.10'
Rivers
Split Lake
Birthday Rap.
Gull Lake
Gull Rap. F.67'
Butnau R.
Kettle Rap.
Kettle River
Lady Spruce Rap.
Limestone
Limestone River
Little Churchill River
CAN. NAT. RYS.


CANADIAN TRAVEL BUREAU
OTTAWA CANADA
THE PAS to PORT NELSON
Scale 22 Miles to 1 inch
10 0 10 20 30 40 50 60 70
N
Elbow Lake
Rap.
Reed Lake
Tramping Lake
Wekusko Pt.
Wekusko Lake
Wekusko Br.
Falls
Rap.
Kentucky Rap.
Grass River
Rap.
Rap.
Mettahto River
Pakwa L.
Setting Lake
Seagull Rap. F.12'
Frieze Rap. F.30'
Kwasichewan Falls 42'
Point Lake
Partridge Crop
Wintering L.
Witchai Lake
Bratwest River
Teal Lake
Bulmaple Lake
Standing Stone Rap. F.10'
Nelson River
CAN. NAT. RYS.
Split Lake
Little Churchill River
Limestone River
Birthday Rap.
Gull Lake
Gull Rap. F.67'
Bannan R.
Kettle Rap.
Kettle River
Long Spruce Rap.
Limestone Rap.
Nelson River
Head of Navigation
PORT NELSON
York Factory
HUDSON BAY
Hayes River

a long narrow point a short distance from the entrance to the lake, the route continues along Grass river.

About 4 miles below the turn is a series of three rapids with portages of 150 yards, 180 yards and 130 yards respectively. Below the rapids the river expands and 7 miles farther on enters Iskwasum lake. Crossing this lake to its southern end the route turns sharply east through the southern end of Loucks lake and following Grass river through a winding course to Reed lake, a large body of clear water teeming with trout and whitefish. Crossing Reed lake to its eastern side, a distance of 15 miles, the route again enters Grass river and follows it to Tramping lake, a distance of 6 miles in which there are seven small rapids.

Traversing Tramping lake to its northern end the river is followed to the Wekusko Falls, 45 feet high, at the entrance of Wekusko lake. Crossing this lake to its northeast corner the river is again entered and followed through a winding course to Pakwa lake. Cutting across the north end of this lake the route leads northeast to Setting lake. This lake, locally called John Scott's lake, is a long narrow body of water, extending in a northeast and southwest direction. From the northeast corner of the lake the route again enters Grass river over Sasaqui rapids which have a descent of 12 feet. Below the rapids the river widens into a small lake 4 miles long at the foot of which is Piscow or Lynx rapids with a descent of 50 feet. From this rapids the river follows a course north-northeasterly for 23 miles to the south end of Paint lake. Kwasitchewan falls, 42 feet high, occurs at a short sharp bend about the middle of this stretch.

Crossing Paint lake to its northeast corner, a distance of 15 miles, the route follows the Grass river for another 15 miles, to Partridge Crop lake. Crossing this lake, which is very irregular, the route leads through Natawevan lake at the foot of which is Standing Stone rapids with a fall of 10 feet. Below the falls the route leads north through Bald Eagle lake, east through Teal lake and north again along the Grass river to Witchai lake. Leaving this lake at its northeast corner the river, which is still followed, runs north 4 miles then east 14 miles to join the Nelson river. From here the course follows the latter river. Five miles below the junction the Nelson enters Split lake. The Hudson's Bay Company have a post about half way down this lake on the north shore. Crossing the lake, a distance of 25 miles, the route follows the Nelson in an easterly direction. Rapids begin about 3 miles below the lake and there is a total fall of 33 feet in the 22 miles to Gull lake which is only an expansion of the river. Gull rapids at the eastern end of the lake have a fall of 67 feet.

Thirty-one miles below Gull rapids is Kettle rapids where the Hudson Bay Railway crosses the Nelson by a magnificent steel bridge of 1,000 feet span. Thirty-three miles below the rapids is the extreme head of navigation from the Bay. Long Spruce and Limestone rapids, each with a fall of over 85 feet, occur in this distance. Fifty-five miles below Head of Navigation is Seal Island and 12 miles farther Port Nelson on Hudson Bay.

Facilities

In connection with those northern canoe journeys, the guides and equipment are available for those who undertake the adventure. The facilities of the Hudson's Bay Company are available to those who wish to penetrate Manitoba's northland. No organization knows the wilderness of the north better than the Hudson's Bay Company which is always ready to assist those who are interested in canoe adventures and those who wish to gain a greater knowledge of northern Manitoba which still remains a land of adventure where man matches his resourcefulness and courage with the stern challenges of unrelenting nature.

Canoe Trips in the Southern Part of the Province

To those who enjoy canoeing in more accessible parts of the country, near to civilization and conveniences of modern life, there are a number of unexcelled canoe trips available.

Lake of the Woods to Lake Winnipeg

The total fall between the Lake of the Woods and Lake Winnipeg is 248 feet, occurring mostly at falls fairly well distributed throughout the length of the river.

In leaving Kenora canoes and equipment can be placed in the river below the lake outlets. Within the first mile or two some swift and swirling currents may be encountered, but the first rapids reached is The Dalles, about some four or five miles above Minaki. This can be run with canoes in charge of experienced canoemen.

From Minaki the voyager proceeds northward about 15 miles to Whitedog Falls. These falls are passed by a series of three portages situated on the right-hand side of the main channel.

Continuing downstream some 20 miles, Boundary Falls is reached. The portage here is on the left-hand side of the main channel, or if the back channel is taken the portage is on the right-hand side of the secondary channel.

Below Boundary Falls and to the head of Lamprey Falls, a distance of 30 miles, considerable swift water, swirling current and eddies are encountered, but there is nothing dangerous to an experienced canoeman.

At Lamprey Falls, the portage is on the left bank. Proceeding downstream from Lamprey Falls some 9 miles, the next portage is at the Pointe du Bois hydro electric plant. This is approached by keeping close to the right-hand shore and landing at the dock to the right of the intake channel. Groceries and supplies may be obtained from the stores at Pointe du Bois, but no supplies are available between Minaki and Pointe du Bois.

Slave Falls is the second hydro electric power plant encountered on the trip downstream some 4 miles below Pointe du Bois. These two plants are owned by the city of Winnipeg, and have a total capacity of 200,000 horsepower. The approach to the portage around Slave Falls is along the right-hand shore. The next portage encountered is at Sturgeon Falls, 6 miles below Slave Falls, and here the portage is on the left-hand shore.

Proceeding downstream 8 miles the next portage is reached at the Diversion Dam, and is a short portage located on the left river bank.

Proceeding downstream from Diversion Dam along the main channel 2 miles, the next rapids encountered are those at Twin Falls, and these should be approached from the right-hand side.

Proceeding downstream from Twin Falls 5 miles, the next portage is at Seven Sisters Hydro-electric development, the portage being

located on the left-hand river bank at the end of the dam. Provisions and supplies may be obtained at the store at Seven Sisters, or from the settlers in the vicinity.

Continuing downstream from Seven Sisters, it is only a short distance to the upper end of Lac du Bonnet. From Lac du Bonnet to Lake Winnipeg there is a settlement all along the river bank and stores at Great Falls, Pine Falls and St. George.

Leaving Lac du Bonnet, it is necessary to portage past the first and second McArthur Falls, and this can be most conveniently done by canoes following down the left-hand side of the river bank until the lower falls are passed and then taking the centre of the stream to the Great Falls hydro electric development. Approaching this plant, the portage is on the left bank some 200 or 300 yards above the dam.

Three miles below the Great Falls plant, Whitemud Falls is reached. At high water stage, the portage is on the left-hand shore, but at lower stages portages may be conveniently made at the right-hand side, and particularly to the right of the rock-cut channel.

Five miles downstream Silver Falls is reached, requiring two short portages, both on the left-hand bank.

Six miles downstream is Pine Falls. The portage here is also on the left-hand bank.

The Winnipeg river, even at low stages, is a large stream. In the upper reaches, i.e., between the Lake of the Woods down to about Lac du Bonnet, the shoreline is rocky and the adjoining lands forest covered. From Lac du Bonnet down, the rock is mostly overlaid with a clay soil and the country on the south side of the river is a fairly well settled farming district.

In making a canoe trip down the Winnipeg river from Kenora to Lake Winnipeg, at least one person in each canoe should be an experienced canoeman.

The Whiteshell and Winnipeg Rivers

This canoe trip commences in Caddy Lake which is identified on the map on the following page.

Passing through, Caddy lake extends north 3 miles, then narrows down to river width for over a mile, after which the Canadian National Railway is reached, the passage under which is identical to that of the Canadian Pacific Railway, with a little better depth of water. (About 3/4 of a mile north of the Canadian Pacific Railway, a lookout should be kept for a small reef which is located in the centre of the lake. With water levels as they have been during the last few years, a small portion of this reef can be seen above water.

After July a heavy growth of wild rice makes the use of the paddle necessary for about 1 mile before the Canadian National Railway is reached, and for about 1/2 mile north of it where the waters are at river width.

Proceeding north, a long, narrow lake about 2 miles in length is entered, at the north end of which are two portages. The west one is best, being hardly more than a "lift over".

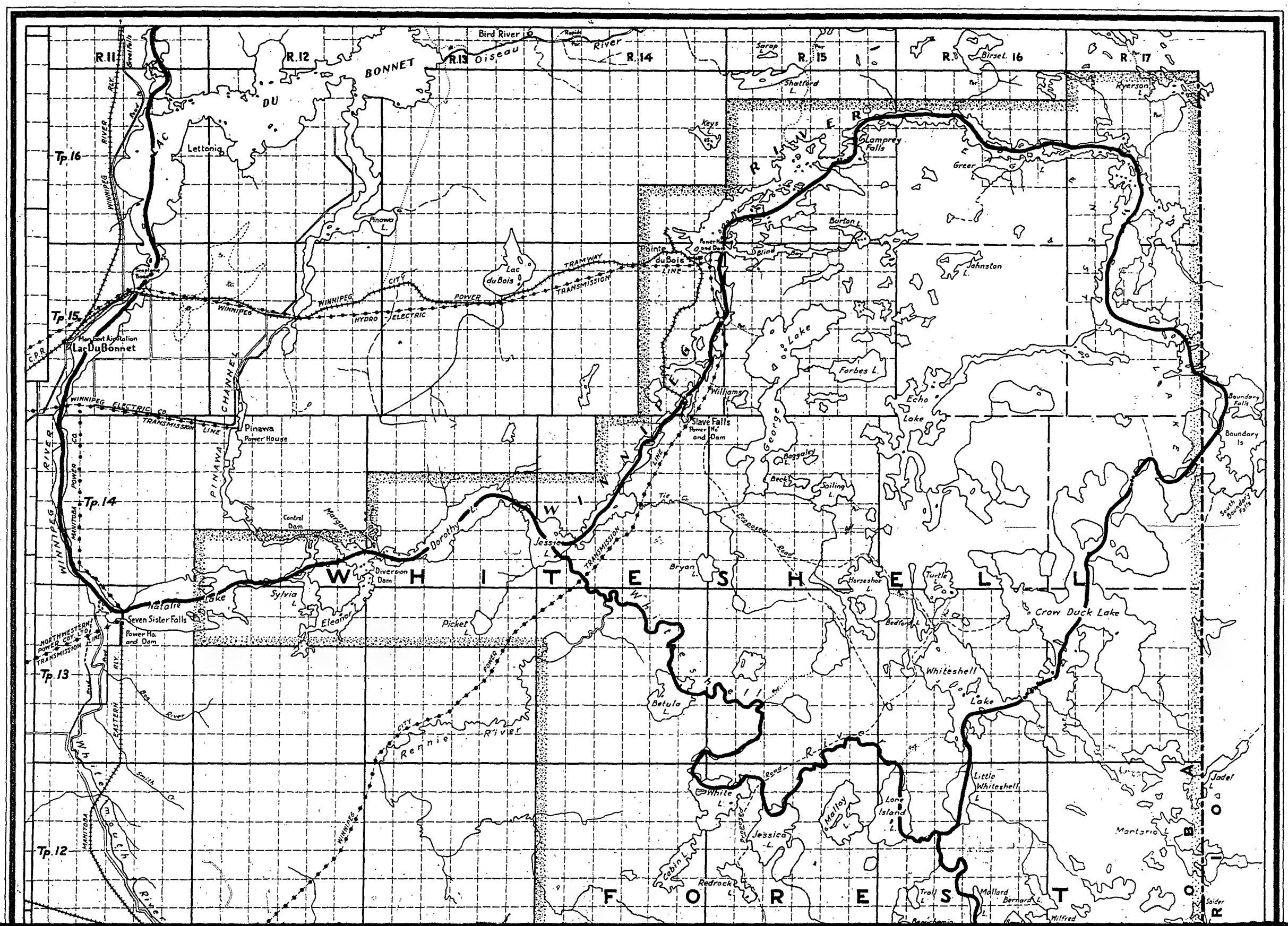
Keeping to the west shoreline for another 1/2 mile and passing through a "narrows", another lake about 3 miles long is entered, at the north end of which the water narrows down to river width for 2 miles and opens again into a wild rice lake named Mallard lake. The growth is heavy in the fall, and the paddle has to be resorted to. The outlet at the northwest corner of Mallard lake is a very narrow rocky gorge, and a portage of less than a quarter of a mile

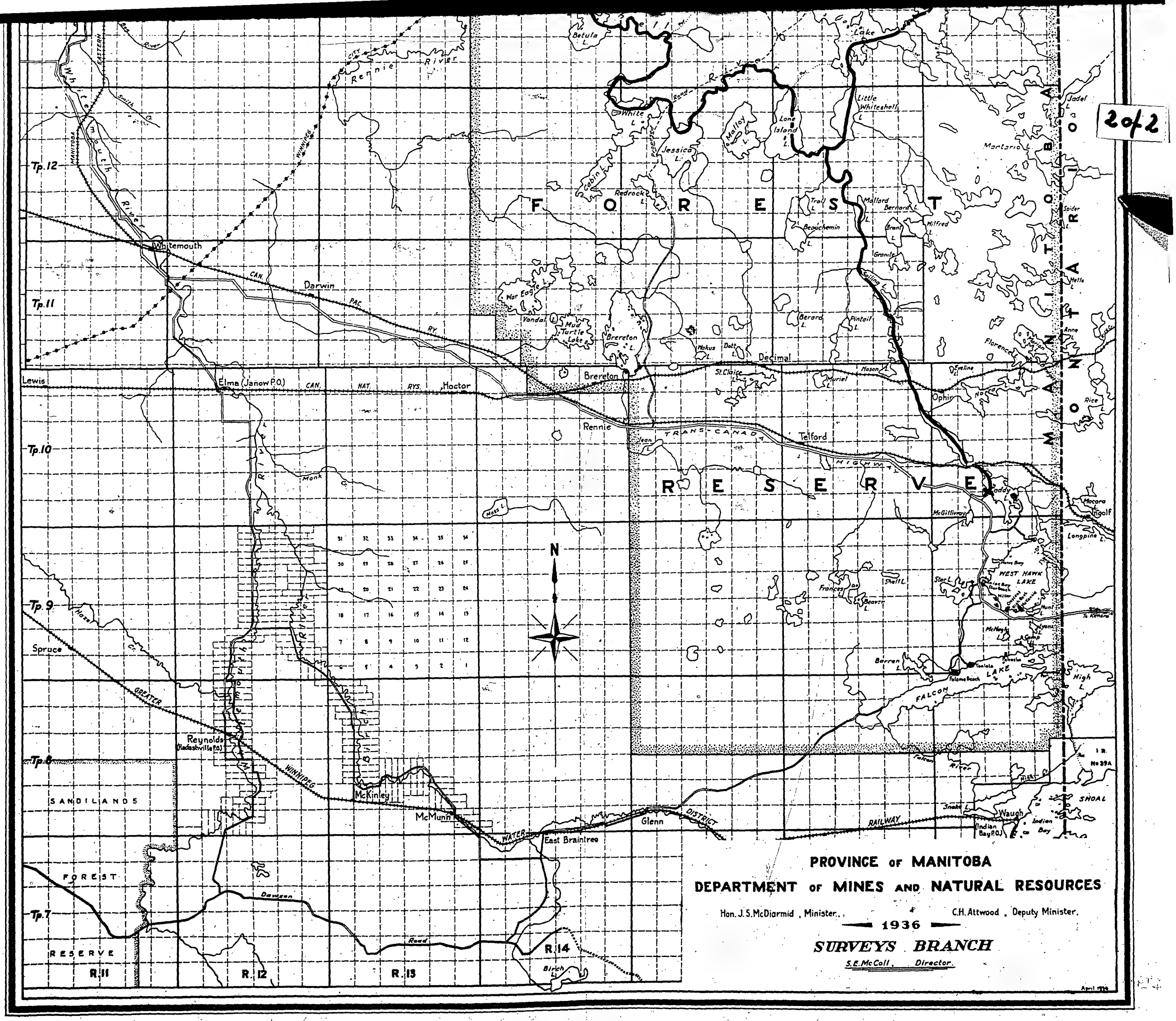
142

CANOE ROUTES

WHITESHELL & WINNIPEG RIVERS

MANITOBA




PROVINCE OF MANITOBA
DEPARTMENT OF MINES AND NATURAL RESOURCES
Hon. J. S. McDiarmid, Minister.
C.H. Attwood, Deputy Minister.
1936
SURVEYS BRANCH
S.E. McColl, Director.
April 1939
FOREST RESERVE
SANDILANDS FOREST RESERVE
MANITOBA
Whitemouth
Darwin
Brereton
Decimal
Rennie
Telford
Elma (Janow P.O.)
Hoctor
Lewis
Spruce
Reynolds (Radashville P.O.)
McKinley
McMunn
East Braintree
Glenn
Waugh
Falcome Beach
Tp.12
Tp.11
Tp.10
Tp.9
Tp.8
Tp.7
R.11
R.12
R.13
R.14
N
Whitemouth River
Rennie River
Brereton L.
Redrock L.
Jessica L.
Malloy L.
Lone Island L.
Little Whiteshell L.
Mallard L.
Bernard L.
Granite L.
Pintail L.
Muriel L.
Mason L.
Ophir
Florence L.
Anne L.
Rice L.
Longpine L.
Macoma L.
Jadel L.
Spider L.
Hello L.
High L.
Star L.
Shell L.
Frances L.
Beaver L.
Barren L.
Moss L.
Birch L.
Snake L.
Indian Bay
Indian Bay P.O.
Falcon River
Dawson Road
Greater Winnipeg Water District Railway
Trans-Canada Highway
Canadian National Rys.
Canadian Pacific Ry.
Eastern Ry.
Smith Cr.
Hazel Cr.
Monk Cr.
Mud Turtle Lake
War Eagle L.
Vandal L.
Dolt L.
Nakus L.
Sailing L.
Beauchemin L.
Trail L.
Berard L.
Brant L.
Milfred L.
Mantario L.
Eveline L.
Marion L.
Lake Winnipeg
WEST HAWK LAKE
Falcome Beach
Waugh
Indian Bay
Shoal Bay
Hunt L.
Lyons L.
McHugh L.
Camp L.
Hawk Bay
Star Bay
Dorbeck
Milton
Crescent
Hawk Bay
Wakeman
Tenlata
Falcon Lake
Falcome Beach
Shoal Bay
I.R. No. 39A
Rennie
Jean L.
Betula L.
White L.
Lake
Road
Proposed

2 of 2

is necessary. This portage is on the east side of the narrows.

From Caddy lake to Mallard lake the route is very pretty, with high, rocky shorelines and lovely timbers - mostly jack pine. Portaging north and entering the Whiteshell River, the scenery changes, the low shoreline being fringed with tall grasses, back of which is seen a heavy stand of mature poplar.

About 5 miles north, the "Forks" is reached - the left hand branch flowing into Lone Island lake, the right hand into the Little Whiteshell lake, which is reached about 1 mile from the "Forks". This lake is about 3 miles long, and at the north end narrows down and joins with the south end of Whiteshell lake.

Heavy growth is sometimes encountered in the later summer and fall on Little Whiteshell lake, and is, incidentally, a great rendezvous for large numbers of wild ducks at that period. The Whiteshell lake is approximately 5 miles north and south, and from 2 to 4 miles wide, with numerous islands and good shores for camping.

To reach Crow Duck Lake, a portage is made at the east side of the lake. This portage is a double one, being from Whiteshell into a small lake, possibly 300 yards wide, then a "lift-over" into Crow Duck lake. This lake is a fair sized body of water, being over 8 miles long. At the north end is a short portage into a small stream, which flows into Eaglenest lake (Winnipeg River) on the Manitoba-Ontario boundary. Pointe du Bois and other points can be reached by following the river, north and west, but an unexperienced canoeist should not undertake this without a capable guide.

An alternative route is from the "Forks" north of Mallard lake, by the west or left hand branch into Lone Island lake, the river again to Betula or Birch lake, then north to the Winnipeg river below Sturgeon Falls. There is plenty of hard work on this route, owing

to numerous portages, depending a lot upon the water levels, but it is a very interesting trip if one does not mind the hard work at the portages.

If preferred, the canoeist, after entering the Winnipeg River from Eaglenest lake, can turn eastward and continue by the Winnipeg river to Minaki, 40 miles distant. Three short portages just west of Rough-rock lake are the only obstacles encountered.

The water resources of Manitoba are unique. The whole Canadian west, from the Rocky mountains east, drains into the lake region in Manitoba, giving the province a wealth of lakes and rivers, large and small, as well as the Churchill and Nelson rivers which flow into Hudson Bay - Manitoba's sea coast.

The years are bringing a greater appreciation of Manitoba's northland - what it offers to those who desire an experience in a country unspoiled by civilization. To those who appreciate outdoor life Northern Manitoba with its lakes and rivers will grow in appeal and charm, the place where the stresses and strains of modern civilization may be forgotten amongst scenes of natural beauty.

APPENDIX

RAILWAY REVENUE TONNAGE - PRAIRIE PROVINCES

1921 - 1936

NET IMPORTS, NET EXPORTS VIA RAILWAYS

(Net Imports (x): Net Exports (-)).

	Year	Manitoba	Saskatchewan	Alberta	Prairie Provinces
Agricultural Products	1921	-1,169,343	-4,635,591	-2,000,874	- 7,805,308
	1922	-2,049,798	-6,302,472	-2,012,911	-10,365,181
	1923	-1,507,686	-6,614,550	-3,192,148	-11,314,384
	1924	-1,598,071	-5,009,422	-3,413,594	-10,021,087
	1925	-2,228,653	-6,437,986	-2,929,992	-11,596,631
	1926	-2,277,032	-5,915,299	-3,127,111	-11,319,442
	1927	-1,610,527	-5,980,857	-3,691,310	-11,282,694
	1928	-1,998,556	-8,490,047	-6,109,841	-16,598,444
	1929	-1,168,987	-4,102,788	-3,578,448	- 8,850,222
	1930	-1,522,248	-4,176,388	-3,081,426	- 8,780,062
	1931	- 899,648	-4,057,816	-3,598,808	- 8,556,272
	1932	-1,073,610	-3,974,934	-4,873,875	- 9,922,419
	1933	-1,109,213	-3,783,683	-3,538,492	- 8,431,388
	1934	-1,223,758	-3,213,812	-3,243,067	- 7,680,637
	1935	- 868,756	-3,564,334	-2,979,393	- 7,412,483
	1936	-1,112,853	-4,074,461	-2,574,276	- 7,761,590
Animal Products	1921	- 19,714	- 28,383	- 79,188	- 127,285
	1922	x 23,957	- 74,820	- 148,051	- 198,914
	1923	x 12,026	- 86,041	- 109,546	- 183,561
	1924	x 1,624	- 107,202	- 159,783	- 265,361
	1925	- 20,264	- 100,267	- 177,362	- 297,893
	1926	- 10,795	- 87,649	- 172,834	- 271,278
	1927	- 27,972	- 81,113	- 129,338	- 238,423
	1928	- 19,424	- 71,255	- 114,690	- 205,369
	1929	- 21,421	- 80,700	- 129,675	- 231,796
	1930	- 11,310	- 57,714	- 103,547	- 172,571
	1931	- 31,184	- 79,007	- 121,419	- 231,610
	1932	- 14,376	- 71,958	- 133,086	- 219,420
	1933	- 13,897	- 81,606	- 156,985	- 252,488
	1934	- 13,564	- 107,050	- 176,801	- 297,415
	1935	- 17,894	- 135,965	- 196,774	- 350,633
	1936	- 8,394	- 170,153	- 251,967	- 430,514

RAILWAY REVENUE TONNAGE - PRAIRIE PROVINCES

(cont'd)

	Year	Manitoba	Saskatchewan	Alberta	Prairie Provinces
Mine Products	1921	x 942,502	x 1,274,332	-1,805,892	x 410,942
	1922	x 934,858	x 1,340,309	-1,843,571	x 431,596
	1923	x1,008,716	x 1,310,101	-1,746,808	x 572,009
	1924	x 888,040	x 1,243,215	-1,355,837	x 775,418
	1925	x1,020,682	x 1,292,604	-1,630,076	x 683,210
	1926	x1,040,984	x 1,305,802	-1,656,685	x 690,101
	1927	x1,068,351	x 1,449,615	-1,826,299	x 691,667
	1928	x1,121,227	x 1,678,104	-1,950,817	x 848,514
	1929	x1,156,618	x 1,678,620	-1,887,788	x 947,450
	1930	x1,094,087	x 1,431,718	-1,688,534	x 837,271
	1931	x 894,002	x 1,039,910	-1,283,943	x 649,969
	1932	x 845,488	x 1,192,958	-1,567,479	x 470,967
	1933	x 783,318	x 1,032,006	-1,421,837	x 393,487
	1934	x 713,575	x 1,009,155	-1,351,054	x 371,676
	1935	x 769,953	x 1,069,317	-1,374,231	x 265,039
	1936	x 820,358	x 1,242,055	-1,742,821	x 319,592
Forest Products					
	1921	x 75,197	x 180,400	x 229,714	x 485,311
	1922	x 77,348	x 188,583	x 154,684	x 420,615
	1923	- 12,737	x 247,631	x 132,238	x 367,132
	1924	- 160,288	x 155,676	x 68,220	x 636,608
	1925	- 79,153	x 199,045	x 128,743	x 248,635
	1926	- 72,016	x 253,700	x 197,235	x 378,919
	1927	- 51,437	x 245,009	x 181,043	x 374,615
	1928	- 109,751	x 338,652	x 278,168	x 507,070
	1929	- 13,262	x 234,464	x 225,983	x 447,185
	1930	- 73,919	x 117,480	x 113,913	x 157,474
	1931	- 31,376	x 34,539	x 83,932	x 87,095
	1932	x 13,363	x 45,623	x 71,553	x 130,539
	1933	- 40,418	x 33,175	x 58,543	x 51,300
	1934	- 33,814	x 39,871	x 70,014	x 76,071
	1935	- 10,264	x 46,785	x 66,448	x 102,969
	1936	- 60,010	x 39,891	x 49,816	x 29,697

RAILWAY REVENUE TONNAGE - PRAIRIE PROVINCES

(cont'd)

	Year	Manitoba	Saskatchewan	Alberta	Prairie Provinces
Manufactures and Miscellaneous	1921	x 271,231	x 313,709	x 177,377	x 762,317
	1922	x 217,686	x 247,401	x 167,673	x 632,760
	1923	x 165,787	x 262,549	x 224,510	x 652,846
	1924	x 176,186	x 250,974	x 30,440	x 457,600
	1925	x 208,023	x 317,925	x 130,795	x 656,743
	1926	x 251,438	x 495,465	x 187,093	x 933,996
	1927	x 236,064	x 525,205	x 215,061	x 976,330
	1928	x 296,464	x 736,907	x 360,837	x1,394,258
	1929	x 297,888	x 691,271	x 439,359	x1,428,518
	1930	x 263,230	x 453,427	x 222,141	x 938,798
	1931	x 178,556	x 267,889	x 138,977	x 585,423
	1932	x 244,898	x 215,880	x 178,819	x 639,597
	1933	x 211,453	x 142,033	x 122,753	x 476,239
	1934	x 233,550	x 163,835	x 132,744	x 530,179
	1935	x 282,681	x 258,101	x 119,779	x 658,561
	1936	x 258,709	x 215,371	x 144,746	x 618,826
Grand Total	1921	x 99,873	-2,895,033	-3,479,863	-6,274,023
	1922	- 795,549	-4,800,999	-3,682,176	-9,079,124
	1923	- 333,894	-4,830,310	-4,691,754	-9,905,958
	1924	- 692,509	-3,468,759	-4,850,554	-9,009,822
	1925	-1,099,365	-4,728,679	-4,477,292	-10,305,936
	1926	-1,067,421	-3,947,981	-4,602,302	-9,617,704
	1927	- 385,521	-3,842,141	-5,250,843	-9,478,505
	1928	- 710,040	-5,807,638	-7,536,293	-14,053,971
	1929	x 250,836	-1,579,133	-4,930,569	-6,258,866
	1930	- 250,170	-2,231,477	-4,537,453	-7,018,100
	1931	x 110,350	-2,794,485	-4,721,261	-7,405,398
	1932	x 15,763	-2,592,431	-6,324,068	-8,900,756
	1933	- 168,757	-2,658,075	-4,936,018	-7,762,850
	1934	- 324,011	-2,107,951	-4,568,154	-7,000,126
	1935	x 155,720	-2,328,096	-4,564,171	-6,736,547
	1936	- 102,190	-2,747,297	-4,374,502	-7,223,989

STATEMENT NO. 2.

GENERAL REVENUE OR CONSOLIDATED FUND

DETAILED STATEMENT OF CURRENT EXPENDITURES CLASSIFIED BY FUNCTIONS

(Thousands of Dollars)

AS AT FISCAL YEAR ENDS NEAREST TO 31st DECEMBER

	1913 30th Nov 1913	1921 30th Nov 1921	1925 30th Apr 1926	1926 30th Apr 1927	1927 30th Apr 1928	1928 30th Apr 1929	1929 30th Apr 1930	1930 30th Apr 1931	1931 30th Apr 1932	1932 30th Apr 1933	1933 30th Apr 1934	1934 30th Apr 1935	1935 30th Apr 1936	1936 30th Apr 1937
HIGHWAYS, BRIDGES AND FERRIES --														
A Administration and Supervision -														
(1) Salaries	71	70	67	65	86	97	112	123	93	117	105	100	111	119
(2) Other Expenses		11	24	23	32	53	109	92	76	50	47	44	57	60
	71	81	91	88	118	150	221	215	169	167	152	144	168	179
B Main Highways --														
(1) Construction (x)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(2) Purchase of Equipment (x)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(3) Maintenance and repairs	-	-	66	123	263	541	661	866	464	398	253	255	269	228
(4) Equipment Rentals	-	-	-	-	-	-	-	-	199	163	110	119	140	134
	-	-	66	123	263	541	661	866	663	561	363	374	409	362
C Secondary or District Highways and Local Roads --														
(1) Construction (x)	118	127	92	109	115	121	131	150	104	42	33	31	72	44
(2) Purchase of Equipment (x)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(3) Maintenance and Repairs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) Equipment Rentals	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	118	127	92	109	115	121	131	150	104	42	33	31	72	44
D Highway Grants to Municipalities --														
(1) Construction (x)	211	131	85	97	78	94	130	105	75	35	26	29	44	33
(2) Maintenance and Repairs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	211	131	85	97	78	94	130	105	75	35	26	29	44	33
E Bridges --														
(1) Construction (x)	4	3	5	12	20	42	14	13	14	7	14	11	10	15
(2) Replacements	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(3) Maintenance and Repairs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	3	5	12	20	42	14	13	14	7	14	11	10	15
F Ferries --														
(1) Construction (x)	2	-	1	-	-	1	-	1	-	-	-	-	-	-
(2) Replacements (x)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(3) Maintenance and Repairs	-	-	-	-	-	-	-	-						
	2													

(Thousands of Dollars)

AS AT FISCAL YEAR ENDS NEAREST TO 31st DECEMBER

	1913 30th Nov 1913	1921 30th Nov 1921	1925 30th Apr 1926	1926 30th Apr 1927	1927 30th Apr 1928	1928 30th Apr 1929	1929 30th Apr 1930	1930 30th Apr 1931	1931 30th Apr 1932	1932 30th Apr 1933	1933 30th Apr 1934	1934 30th Apr 1935	1935 30th Apr 1936	1936 30th Apr 1937
HIGHWAYS, BRIDGES AND FERRIES --														
A Administration and Supervision -														
(1) Salaries	71	70	67	65	86	97	112	123	93	117	105	100	111	119
(2) Other Expenses		11	24	23	32	53	109	92	76	50	47	44	57	60
	71	81	91	88	118	150	221	215	169	167	152	144	168	179
B Main Highways --														
(1) Construction (x)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(2) Purchase of Equipment (x)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(3) Maintenance and repairs	-	-	66	123	263	541	661	866	464	398	253	255	269	228
(4) Equipment Rentals	-	-	-	-	-	-	-	-	199	163	110	119	140	134
	-	-	66	123	263	541	661	866	663	561	363	374	409	362
C Secondary or District Highways and Local Roads --														
(1) Construction (x)	118	127	92	109	115	121	131	150	104	42	33	31	72	44
(2) Purchase of Equipment (x)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(3) Maintenance and Repairs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) Equipment Rentals	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	118	127	92	109	115	121	131	150	104	42	33	31	72	44
D Highway Grants to Municipalities --														
(1) Construction (x)	211	131	85	97	78	94	130	105	75	35	26	29	44	33
(2) Maintenance and Repairs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	211	131	85	97	78	94	130	105	75	35	26	29	44	33
E Bridges --														
(1) Construction (x)	4	3	5	12	20	42	14	13	14	7	14	11	10	15
(2) Replacements	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(3) Maintenance and Repairs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	3	5	12	20	42	14	13	14	7	14	11	10	15
F Ferries --														
(1) Construction (x)	2	-	1	-	-	1	-	1	-	-	-	-	-	-
(2) Replacements (x)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(3) Maintenance and Repairs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	1	-	-	1	-	1	-	-	-	-	-	-
G Docks and Wharves --														
(1) Construction (x)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(2) Maintenance and Repairs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H Other Expenditures (specify)	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(x) Expenditures which have not been charged to Capital Account

Office of Comptroller-General 7th June 1938

2 of 2

STATEMENT NO. 3.

AID TO RAILWAYS BY THE PROVINCE OF MANITOBA FROM THE YEAR 1885 to APRIL 30th, 1937.

As Per Public Accounts.

In the Public Accounts of the Province there is shown as having been raised for the Purpose of Railway Aid the following amounts pursuant to the Authority of Chapter 42 of 48 Victoria ---

Debenture Series "A" dated July 2, 1885	$	787,426.67	Manitoba and N. W. Railway Company
" " "B" " July 2, 1885		899,846.66	Manitoba and S. W. Col. Railway Company
" " "C" " Nov. 1, 1886		255,986.66	Hudson's Bay Railway and S. Company
		$ 1,943,259.99	

All of the above debentures matured July 1st, 1910, and were retired by the Province on due date.

From the year 1886 to 1910 various debit entries were, in time, cancelled by credit entries but the source from which credits were received is not disclosed. Presumably these credits were received from the railway companies, except as to the item in paragraph hereunder ---

In the Public Accounts for the Year ended December 31st, 1900, at Page 222 the following entry appears, and this entry indicates that the Province accepted land in lieu of the moneys advanced. (The Province still holds approximately 48,000 acres of said land).

"Transferred to Consolidated Revenue under 63-4V. Cap. 43 $1,158,213.20"

Section 1 of said chapter 43 reads as follows:

" 1. All real property of whatsoever nature or kind, and wheresoever situate, and all the estate therein, heretofore vested in or that may be hereafter acquired by Her Majesty or the Government of Manitoba, with respect to ---

(a) Half Breed Mortgage and investments;

(b) Under a certain agreement made and entered into between Her Majesty the Queen, of the first part, and the Manitoba and North-Western Railway Company, of the second part, and The Saskatchewan and Western Railway Company, of the third part, bearing date the 9th day of May, A.D. 1899;

(c) Under the provisions of sub-section (4) of section 1, of Chapter 43, of 61 Victoria, being "An Act respecting Aid to Railways", shall be treated as and deemed to be Provincial Lands.

Sub-section (4) of section 1 of Chapter 43 of 61 Victoria, referred to in section 1 above, is as follows:

" (4) The Company shall, from and out of any land grant that may be earned in respect of the line of railway hereby authorized to be aided, bind itself to convey and transfer or cause to be conveyed and transferred to the Government of Manitoba, two hundred and fifty-six thousand acres of land fairly fit for settlement within the Province of Manitoba, to be selected in such a manner as may be agreed upon with the said Company, and upon the transfer of such 256,000 acres of land, the Government of Manitoba may release or assign any claim or security which the Government may have against the Winnipeg and Hudson Bay Railway and Steamship Company or the Winnipeg Great Northern Railway Company."

An issue of debentures series "H" dated October 1st, 1900, in the sum of $349,000.00 was made for the C.N.R. (Minnesota Section) but this was retired at maturity October 1st, 1930, by the present Canadian National Railways; the Railway Company paying the interest direct during the term of the debentures.

There is no further record of any direct aid until the Public Accounts for the fiscal years ending April 30th, 1932, 1933, 1934, 1935, 1936, when in each of these years an amount of $100,000.00 was paid for "Operating Deficit for Manitoba Northern Railway, Flin Flon Branch, i.e. a total of $500,000.00 paid during that period.

The Indirect Liabilities of the Province for Railways, outstanding at date, are:

(a) Canadian Northern Railway 4% Debentures due July 1st, 1939, $3,000,000.00

(b) The rentals payable to the Northern Pacific Railway Company in respect to certain leased railways in Manitoba. The guarantee for this is authorized by Chapter 39 of the 1901 Statutes of Manitoba, and the lease is for a period of 999 years.

STATEMENT NO. 4

THE HIGHWAY TRAFFIC ACT
THE MUNICIPAL AND PUBLIC UTILITY BOARD

PUBLIC SERVICE PASSENGER VEHICLES

Number of operators -	Regular	19
	Chartered	2
Number of buses -	Regular	84
	Chartered	14
Total mileage operated		2,862,629
Average mileage per bus		34,079
Total passengers carried		431,278
Gross revenue		$465,990.29
Operating expense		444,588.62
Net surplus		21,399.67
Total number of round trips		14,122
Total gallons of gasoline used		328,994
Average miles per gallon		8.70
Total taxes (gasoline, registration and certificate fees)		$34,107.38
Wages paid		80,048.16
Hours		156,839
Average wage per hour (cents)		51.04

NOTE: Four (4) operators out of eighteen (18) reported a loss on operations. Seventeen (17) operators reported wages paid.

PUBLIC SERVICE FREIGHT VEHICLES

Total number of trucks and trailers	613
Total number of operators	462
Milk and cream carriers	121
Permits issued, limited periods	6
Total mileage operated	13,374,540
Average mileage per truck	22,180
Total number of round trips	84,420
Total tonnage carried	240,717
Average tonnage per truck	399.2
Total revenue	$1,649,295.45
Average revenue per truck	$2,735.15
Total operating expense	$1,373,486.11
Average expense per truck	$2,277.76
Average round trip mileage	158
Gallons of gasoline used	1,136,795
Gallons of gasoline per truck	1,892
Average mileage per gallon	11.72
Total taxes (gasoline, registration and certificate fees)	$157,300.56
Average tax per truck	$245.09
Revenue per vehicle mile (cents)	12.33
Expense per vehicle mile (cents)	10.57

Statement No. 4 (Cont'd) 2.

Total wages reported	$190,121.53
Total hours	591,034
Average wage per hour (cents)	33.86

NOTE: Twenty (20) operators out of three hundred and sixty-one (361) reported a loss on operations.
Three hundred and thirty-six (336) operators reported wages paid.

For the year ending December 31, 1937.

STATEMENT NO.5.

Additional Statistics re Public Service Vehicles and Commercial Trucks

Type	Motor Vehicle Registrations 1937	Vehicles Regulated By Board	Per cent Regulated By Board
Passenger	65,920	84	0.127
Truck	14,300	1,626	11.370
Trailer	5,050	27	0.535
Total	85,270	1,737	2.038

Comparative Date for 1934-37 inclusive, Public Service Vehicles.

	1934	1935	1936	1937
Buses	65	69	81	84
Trucks and trailers	481	514	567	613

Private Commercial Trucks

	1934	1935	1936	1937
Trucks and trailers	531	696	802	1030

1937 Load Capacity Data - P.S.V. Trucks

	Trucks	601
	Trailers	12
		613
Authorized Load Capacity,	One Ton and Under	97
	One to two tons	190
	Two to three tons	162
	Three to four tons	98
	Over four tons	66
	Total	613
Commercial Trucks	Trucks	1015
	Trailers	15
	Total	1030
Authorized Load Capacity,	One ton and under	322
	One to two tons	308
	Two to three tons	165
	Three to four tons	77
	Over four tons	158
	Total	1030

STATEMENT NO.6

PUBLIC SERVICE VEHICLES BUS ROUTES ON THE HIGHWAYS OF MANITOBA

Winnipeg to Ontario Boundary (en route to Kenora)
Winnipeg to Seven Sisters and Medika
Winnipeg to Pine Falls via Lac du Bonnet
Winnipeg to Libau via East Selkirk
Winnipeg to Riverton via Selkirk
Winnipeg to Riverton via Ridge Road
Winnipeg to Arbor
Winnipeg to Hodgson
Winnipeg to Stony Mountain
Winnipeg to Ashern via Oak Point
Winnipeg to Alonsa via Oakville and Portage la Prairie
Winnipeg to Manitoba-Saskatchewan boundary via Portage la Prairie, Neepawa, Dauphin and Roblin
Winnipeg to Angusville via Portage la Prairie, Neepawa, Minnedosa and Erickson
Winnipeg to Manitoba-Saskatchewan boundary via Portage la Prairie, Neepawa, Minnedosa and Russell
Winnipeg to Manitoba-Saskatchewan boundary via Portage la Prairie, Brandon and Virden
Winnipeg to Manitoba--Saskatchewan boundary via Elm Creek, Souris and Roblin
Winnipeg to Deloraine via Carman, Marchand, Minto and Killarney
Winnipeg to Winkler via Morris
Winnipeg to Emerson
Winnipeg to Vita via Emerson
Winnipeg to Rosa via St. Malo
Winnipeg to Marchand via Steinbach and La Broquerie
Winnipeg to East Braintree via St. Anne
Winnipeg to Lydiatt via Hazelridge

Brandon to Manitoba-Saskatchewan boundary via Souris, Hartney, Deloraine and Melita
Brandon to Peace Garden via Boissevain
Brandon to Killarney via Boissevain
Brandon to Pilot Mound via Ninette and Killarney
Brandon to Baldur via Ninette
Brandon to Neepawa via Minnedosa
Brandon to Benito via Neepawa and Dauphin
Brandon to Swan River
Brandon to Dauphin via Wasagaming
Brandon to Oakburn via Shoal Lake

Dauphin to Winnipegosis

STATEMENT NO. 7.[1]

AUTO TRUCKS
Year 1935.

TRUCK ROUTES	OPERATOR	RAILWAY SERVICE
Winnipeg to Brandon	Royal Transportation Ltd., Wpg. City Dray Co., Winnipeg. McArthur & Son. Brandon.	C.P.-Psgr - Winnipeg-Portage-2 trains daily in each direction, 1 train daily ex. Sun. in each direction, 1 train daily ex. Sat. return daily ex. Mon. 1 train Tues. Thurs. Sat. return Mon. Wed. Fri. Winnipeg-Brandon-2 trains daily and 1 train daily ex. Sun. each way. Portage-Brandon via Varcoe-Mon. Thurs. return Wed. Sat. (Mixed). Tfrt - Winnipeg-Portage-2trains daily in each direction. Winnipeg-Brandon-1 train daily in each direction. Direct Mdse car loads Winnipeg-Brandon daily and Winnipeg-Portage daily. following morning delivery Winnipeg-Carberry loads Mond. Wed. Fri. Following morning delivery. C.N.-Psgr - Daily in each direction. Frt - Daily in each direction. L.C.L. car loads at Winnipeg daily ex. Sun. next morning delivery.
Winnipeg to Dauphin	Clark Freighters, Winnipeg	C.P.-Psgr - Winnipeg-Neepawa-1 train daily ex. Sat. return daily ex. Sun. 1 train Tues. Thurs. Sat. return Mon. Wed. Fri. Wfrt - Neepawa-Portage - Thurs. return Fri. 1 through freight daily. L.C.L. car for Portage loads Wpg. daily-Neepawa direct Tues. Thurs. Sat. Intermediate points Portage-Neepawa Thurs. following day delivery.

1 This statement indicates the extent of commercial truck routes and railway services over a few selected areas in Manitoba. Space does not permit us showing the entire distribution of truck and railway services over the province, but the several services cited here provide an example of the duplication in services as between trucks and railroads.

TRUCK ROUTE	OPERATOR	RAILWAY SERVICE
Winnipeg to Dauphin (cont'd).		C.N.-Psgr - Via Gladstone-daily ex.Sat. return daily ex.Mon. Via Neepawa - Mon.Wed.Fri. return Tues. Thurs.Sat. Frt - Via Gladstone daily L.C.L. car loads Wpg. daily ex. Sun. delivery following morning.
Winnipeg to Gladstone	S.N. Jefferson, Mayfield, Man. D.B. Hembroff, Gladstone, Man. A. Howe, Gladstone, Man.	C.P.-Psgr - Winnipeg-Gladstone, 1 train daily ex.Sat. return daily ex. Mon. 1 train Tues. Thurs. Sat. return Mon. Wed.Fri. Winnipeg-Portage, 2 trains each direction (daily) 1 train daily ex. Sun. each way. 1 train daily ex. Sat. return daily ex. Mon. 1 train Tues. Thur. Sat. return Mon. Wed. Fri. Wfrt - Winnipeg-Portage, Tues. Fri. return Wed.Sat. Portage-Gladstone, Fri. return Thurs. Tfrt - Daily each way. Direct L. C.L. car loads - Mon. Wed.Fri. giving following morning delivery shipments loading Thurs. in car working Portage to Minnedosa next day delivery. C.N.-Psgr - Via Gladstone-daily ex. Sat. return daily ex. Mon. Wfrt - Mon. Thurs. L. C. L. car loads daily ex. Sun. for Gladstone Psgr - Via Mayfield - Mon.Wed.Fri. return Tues.Thurs.Sat. Wfrt - Thurs. Sat. return Fri. Mon. L. C. L. car loads at Winnipeg Wed. & Fri. Delivery Thurs.Sat.
Winnipeg to Portage	C. L. McCleary Portage Man. A. Tomalin, Portage Man. A. E. Johnston, Winnipeg, Man. Royal Transportation Ltd. Winnipeg, Man.	C.P.-Psgr - 2 trains daily each direction. 1 train daily ex. Sun. each direction. 1 train daily ex. Sat. westbound. 1 train daily ex. Mon. Eastbound.

TRUCK ROUTE	OPERATOR	RAILWAY SERVICE
Winnipeg to Portage (cont'd)		1 train Tues. Thurs. Sat. westbound. Mon. Wed. Fri. eastbound.
		Tfrt - 2 trains daily each direction.
		Wfrt - Westbound Tues. Fri. return Wed. Sat.
		L. C. L. car loads Winnipeg, daily ex. Sun. for following morning delivery.
		C.N.-Psgr - No's. 1-2-3-4-5-6- daily. 9-10 daily ex.Sat. return daily ex. Mon.
		No's. 15-16 Mon. Wed. Fri. return Tues. Thurs. Sat.
		Frt - Daily.